

*December 1946*

# TECHNOLOGY REVIEW

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# technology review

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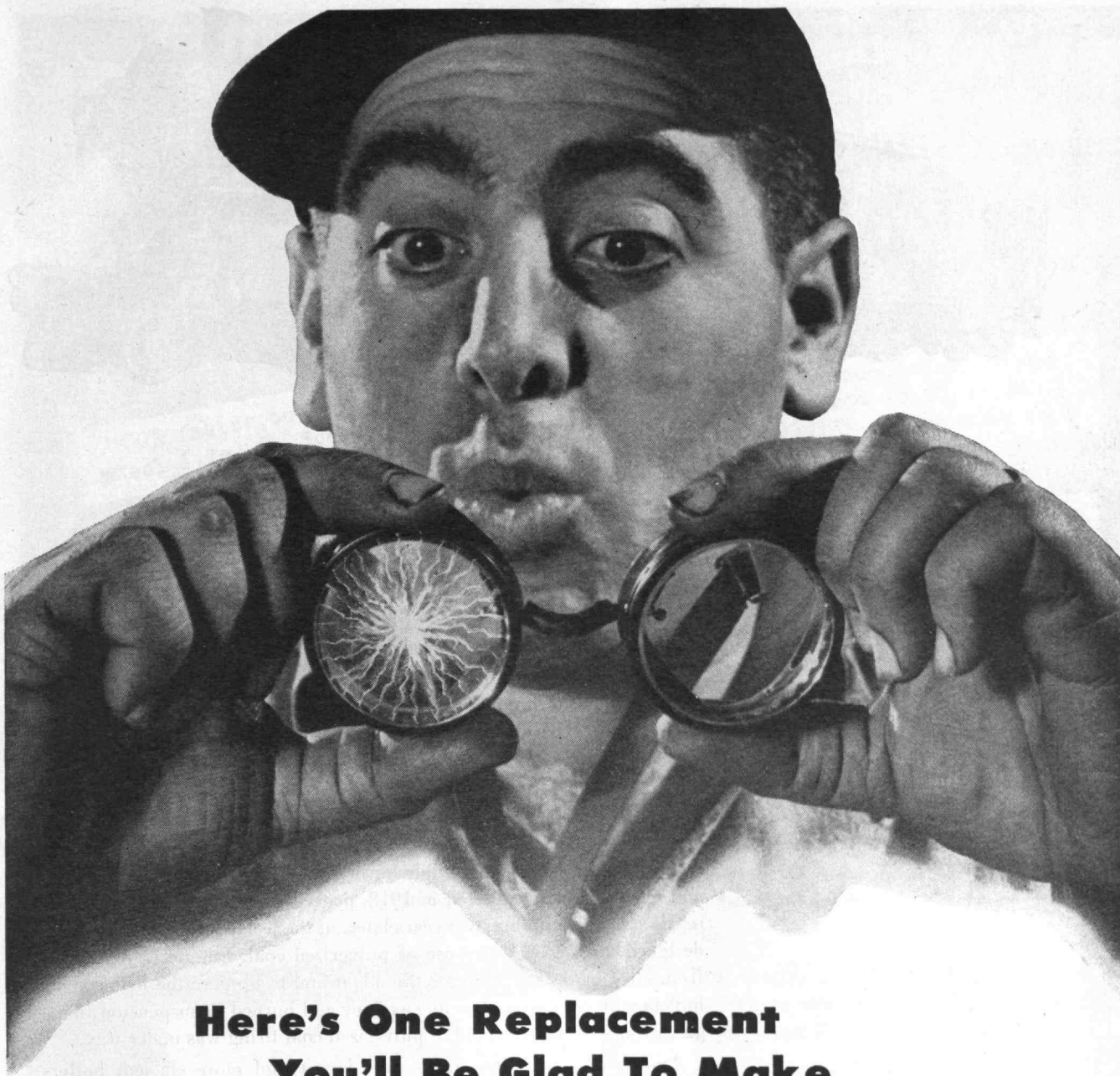
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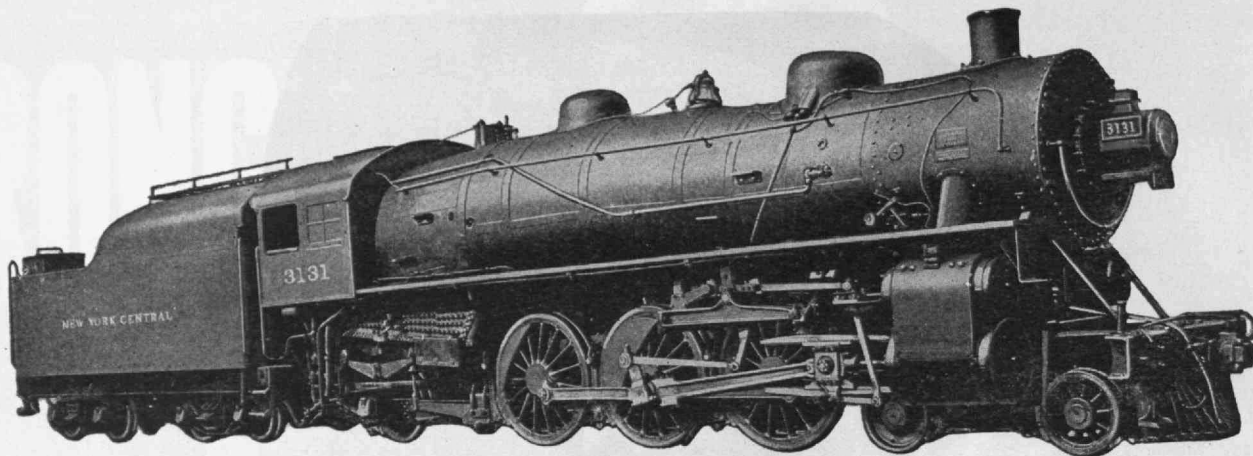
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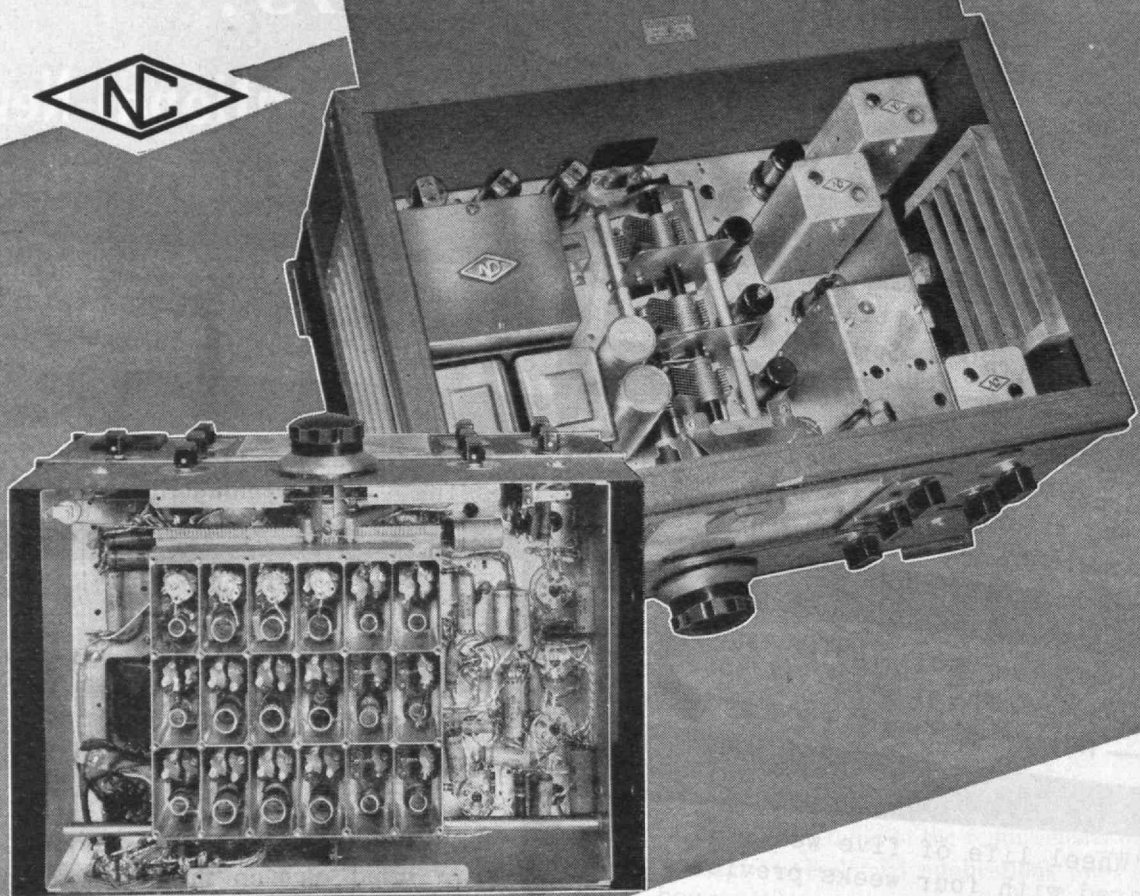
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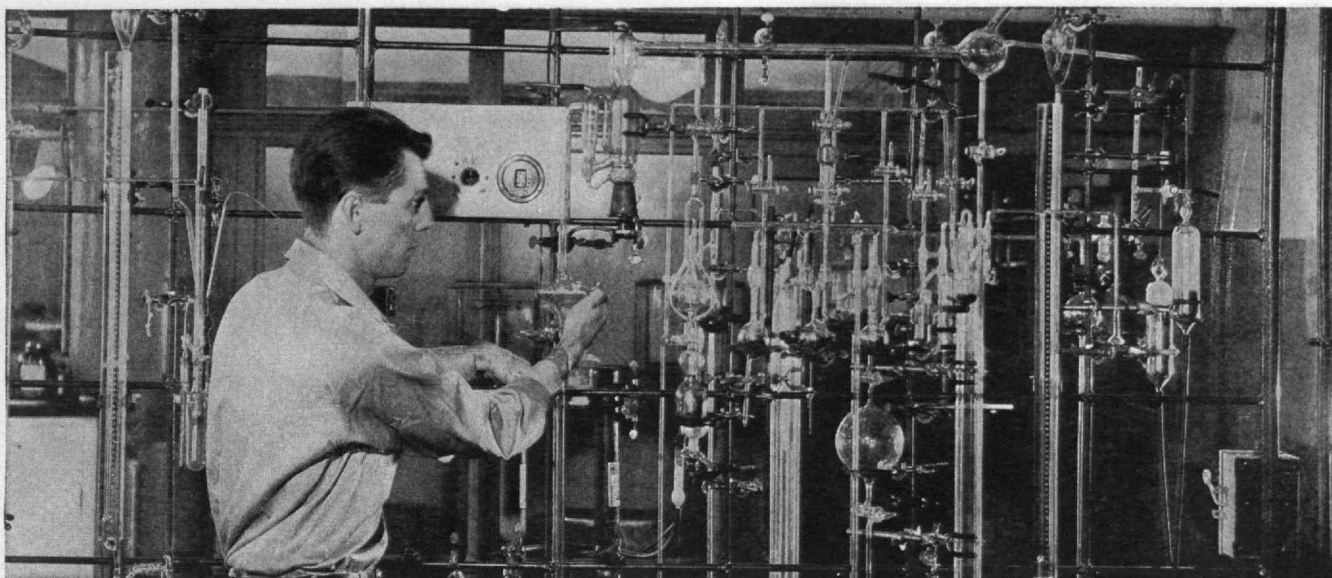


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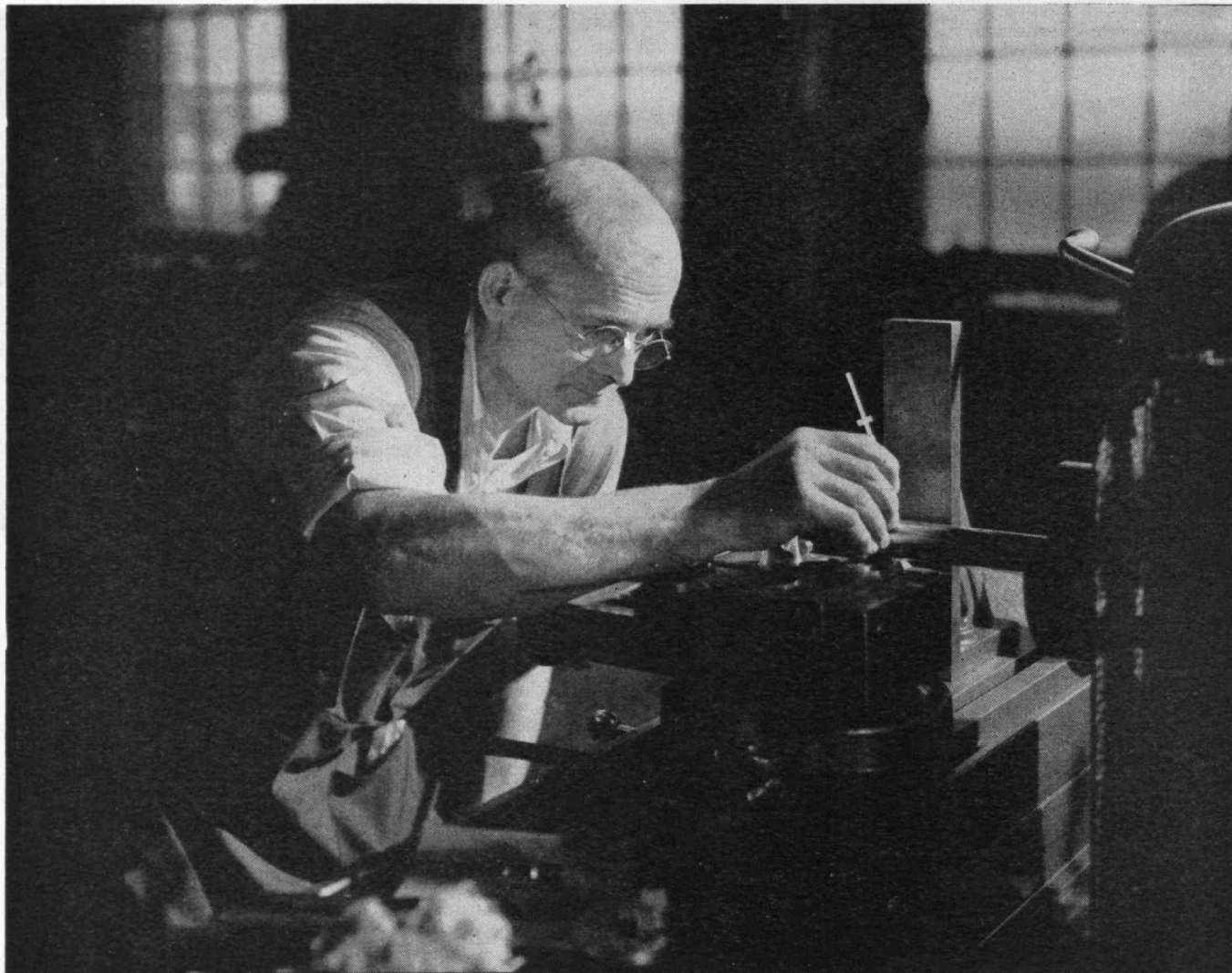
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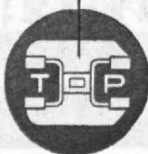


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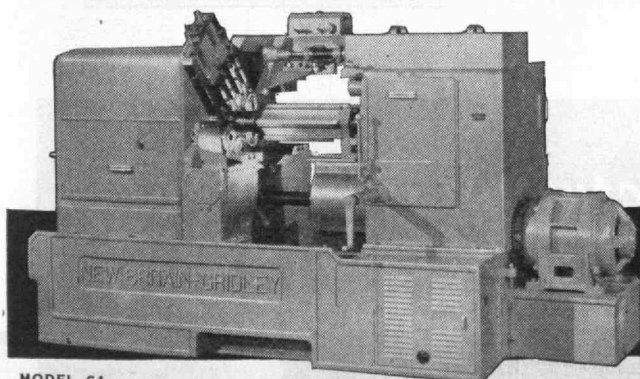


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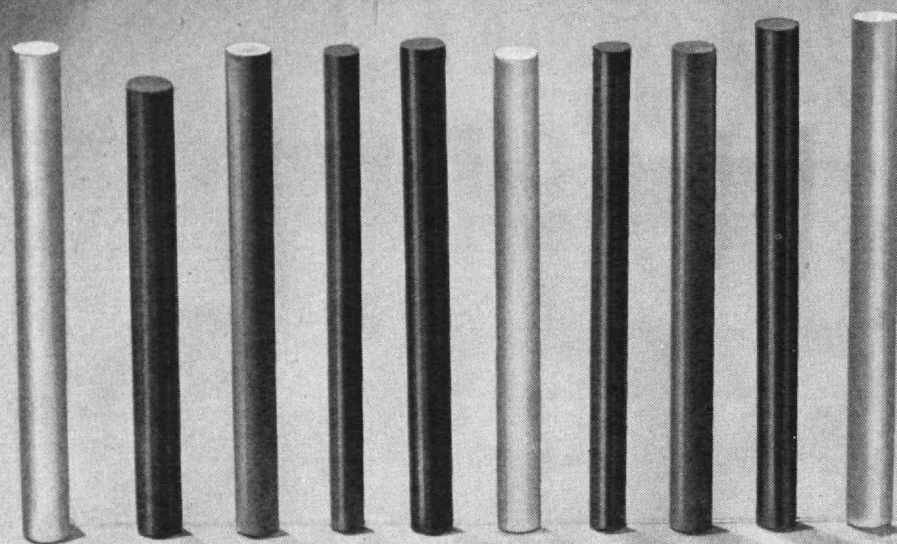
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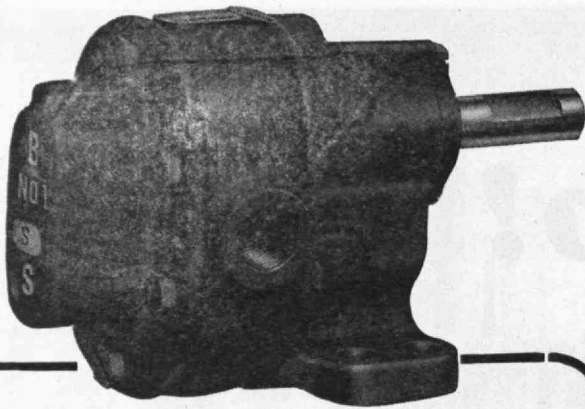
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## THE TABULAR VIEW

**Union of Sciences.**—Joining hands during the war in a program of research aimed to provide whole blood to the men of our armed forces, medicine and physics have accomplished results hardly possible without the close co-operation of these two sciences. The results of this program are recorded (page 91) by physician JOHN G. GIBSON, 2D, and physicist ROBLEY D. EVANS.

After graduation from Amherst College in 1919, Dr. Gibson served in the Field Artillery and then began a business career by attending the Harvard Business School from which he received an M.B.A. degree in 1921. For the next six years he was engaged as production manager in the manufacture of automotive parts, and in selling. Dr. Gibson then returned to Harvard and was graduated from the Harvard Medical School with an M.D. degree in 1932. Since 1933 he has been engaged in research on the measurement of circulating blood volume, one important aspect of which is recorded in this issue. Under a grant which it provided, the National Institute of Health, the Peter Bent Brigham Hospital, and the Harvard Medical School are continuing studies in this field under the direction of Dr. Gibson.

A native of Nebraska, Robley D. Evans attended the California Institute of Technology from which he received his bachelor's degree in 1928 and a doctorate in 1932. From 1929 to 1931 he was director of the research laboratory of C. F. Braun and Company of California, where he was engaged in chemical engineering research. During 1932 to 1934 he was a National Research Fellow in physics at the University of California in Berkeley, after which he came to M.I.T. as assistant professor of physics. He was advanced to associate professor in 1938 and to professor of physics in 1945. In 1937 he was awarded the Theobald Smith medal, an award in medical sciences which is administered by the American Association for the Advancement of Science, and given for the most important contribution to medicine made by an investigator less than 35 years of age.

**Rockets in Battle.**—A long period of military use, marked by spasmodic successes and relative ineffectiveness, is the ancestry of the modern rocket. Brought to the public's attention during the war because of their grim military use, rockets and the historical development of these reaction-propelled missiles, as recounted (page 95) by WILLY LEY, take on added import. A research worker at the Washington Institute of Technology, Mr. Ley is well known to Review readers not only as one of its editorial associates, but also as a lecturer and frequent writer on current topics of technology.

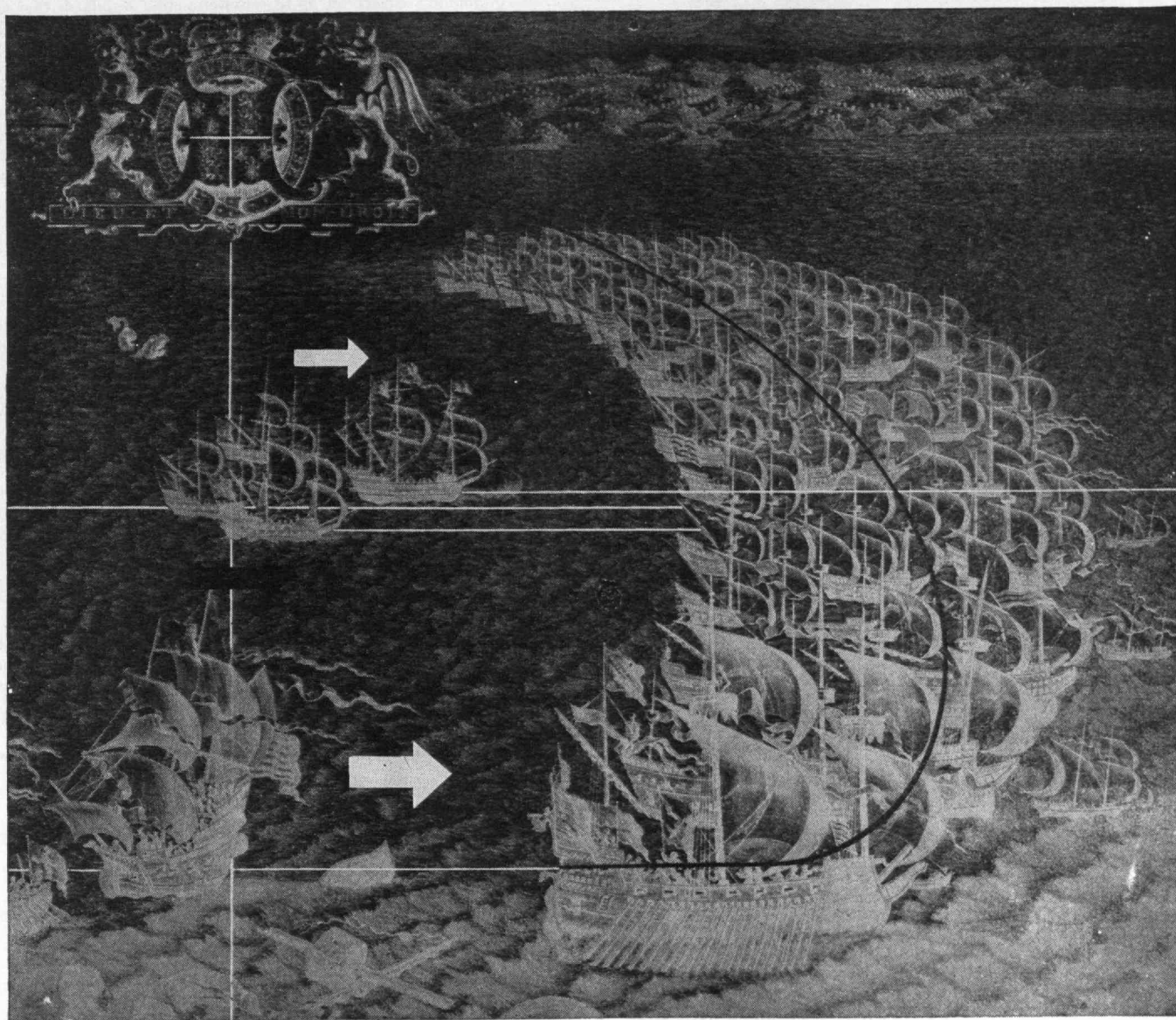
**Post-Industrialism.**—Many factors already operating tend toward decentralization of our large cities, our industrial system, and many of our social institutions. Commenting upon these matters and recognizing that the industrialism which we know may hardly be the way of life for our descendants, PAUL MEADOWS directs thinking (page 101) to what may lie ahead. Dr. Meadows received his doctorate at Northwestern University and is assistant professor of sociology at Montana State University. His primary interests and writings deal with the human aspects of industrialization.

## A LITTLE DOES A LOT

The Spanish built their colossal Armada to smother England by sheer weight. But Drake, with a scratch fleet of nondescript ships, and some brains, reduced the Armada to an unpleasant memory.

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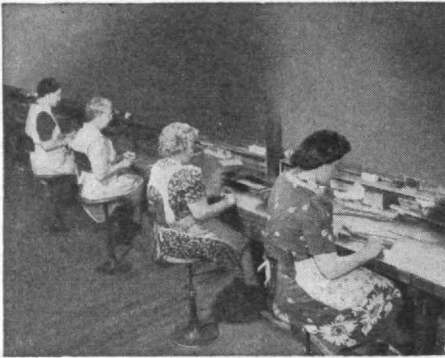


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## MAIL RETURNS

### *The Process Reversed*

FROM FREDERICK ARPKE:

I felt that Dr. Meadows' article "The Industrial Way of Life" in the March issue of *The Technology Review* was excellent. Not only was it well written from a professional standpoint, but it was packed with suggestive ideas and altogether a most interesting thesis.

A really active drive for rural zoning has been under way in the Portland area and is receiving support from the most surprising places. However, this program represents only one small step in the right direction, and only emphasizes again the very crudeness of the tools that we are forced to use in modifying our social and institutional patterns to correspond with technical change.

Why shouldn't society set up the environmental standards that are considered to be desirable, and force our inventive technologists to adjust themselves to this pattern? As a matter of fact, there appears to be evidence that this is happening to some degree. The migration of certain industrial plants to smaller cities does not in any sense dispute the basic advantages of centralization, but rather represents an adjustment to a labor situation characteristic of large cities with which big business has found it difficult to cope. The few production "dis-economies" that might result from such a trend are certainly more than compensated for by the resulting social improvements.

Portland, Ore.

### *Technology and Community Development*

FROM PETER F. DRUCKER:

I think Dr. Meadows' article an excellent presentation of a basic problem, but may I raise one minor point? It seems to me that in contrasting the disorganized industrial way of life with the traditional community life of the past, we are liable to overlook the point that the organization of the past was not innate in the technology of the pre-industrial age but was created by man. In itself any system of production, or any technology, is abstract and impersonal and is not satisfying to man's basic personality. Community and social order are man-made, not material-made. I fail to see any reason why we could not develop a proper community in organizing the industrial way of life. This, however, does in no way mean that I believe we have such a community pattern or that its absence does not constitute a severe danger.

Bennington, Vt.

### *For the Good of Engineers*

FROM WILBERT E. MOORE:

I thought "The Industrial Way of Life" a very good summary of the critical issues facing modern economies, and was especially happy to see it published in *The Technology Review*. It may do the engineers some good.

Princeton, N. J.

### *Speed with Economy*

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*"It is not the finding of a thing, but the making something out of it after it is found, that is of consequence"*

—JAMES RUSSELL LOWELL



## *Why some things get better all the time*

TAKE THE MODERN ELECTRIC LIGHT BULB, for example. Its parts were born in heat as high as 6,000° F. . . in cold as low as 300° below zero . . . under crushing pressure as great as 3,000 pounds per square inch.

Only in these extremes of heat, cold and pressure did nature yield the metal tungsten for the shining filament . . . argon, the colorless gas that fills the bulb . . . and the plastic that permanently seals the glass to the metal stem. And it is because of such materials that light bulbs today are better than ever before.

The steady improvement of the electric light bulb is another instance of history repeating itself. For man has always had to have better materials before he could make better things.



*Producing better materials for the use of industry and the benefit of mankind is the work of Union Carbide.*

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*A pioneer in rubber and the world's leading builder of tires, Goodyear has also worked for years in metals, fabrics, chemicals, plastics, electronics and in many other vital fields . . . always seeking a better way to serve you.*



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# THE TECHNOLOGY REVIEW

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EDITED

AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY



Photo by H. Armstrong Roberts

*"God rest ye, merry gentlemen!"*

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Photo by H. Armstrong Roberts

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Published monthly from November to July inclusive on the twenty-seventh of the month preceding the date of issue, at 50 cents a copy. Annual subscription, \$3.50; Canadian and foreign subscription, \$4.00. Published for the Alumni Association of the M.I.T.: Alfred P. Sloan, Jr., Honorary President; Harold Bugbee, President; Alf K. Berle, C. George Dandrow, Vice-presidents; Charles E. Locke, Secretary; Ralph T. Jope, Treasurer. Published at the Rumford Press, 10 Ferry Street, Concord, N. H. Editorial Office, Room 7-203, Massachusetts Institute of Technology, Cambridge 39, Mass. Entered as second-class mail matter at the post office at Concord, N. H. Copyright, 1946, by the Alumni Association of the Massachusetts Institute of Technology. Three weeks must be allowed to effect changes of address, for which both old and new addresses should be given.

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*Photo by Walter Sancers from Black Star*

*"This house that I'll have in some far day"*

*Vagabond's House — Don Blanding*

# THE TECHNOLOGY REVIEW

Vol. 49, No. 2



December, 1946

## The Trend of Affairs

### *For Tasteless Water*

**A**N abundance of limpid, odorless, tasteless, and disease-free water is fundamental to modern civilization. And despite the public health axiom "a pure water supply is better than a purified water supply," increasing populations have so overtaxed available water sources that polluted sources must frequently be used, making purification treatment necessary. Chlorination, or addition of minute quantities of the element chlorine, is the standard method for killing disease germs in water, and also serves to destroy, by oxidation, certain of the odors and tastes commonly found in contaminated waters. However, a number of modern industrial processes produce wastes with high concentrations of phenols, and dispose of such wastes by discharging them into waterways. Phenolic wastes lend unpleasant tastes and odors to water containing them; furthermore, when such water is chlorinated, these tastes and odors, rather than being destroyed, are intensified by formation of compounds called "chlorophenols."

A new method for eliminating tastes and odors from waters, especially from those containing phenolic wastes, is use of the chlorine derivative chlorine dioxide. This compound has over twice the oxidizing power of chlorine. In addition, chlorine dioxide, rather than combining with phenolic wastes, destroys them. The potentialities of chlorine dioxide for taste and odor control were recognized long ago, but this compound previously could not be used in practical water treatment because its extreme instability prevents storage and shipment. However, when sodium chlorite became abundantly and inexpensively available not long ago, a method was perfected for generating chlorine dioxide in water treatment plants through reaction of sodium chlorite with chlorine, yielding chlorine dioxide and sodium chloride. The apparatus used is quite simple; continuous flows of solutions of the two reagents are mingled in a reaction chamber, and the effluent of this chamber is fed into the water mains. The

sodium chloride so added, being stable, remains in the water, but this salt not only is innocuous but also is so minute in quantity as not to taste salty. The procedure followed is to chlorinate water first to accomplish disinfection, and then to apply chlorine dioxide for removal of tastes and odors.

Besides being effective against chlorophenols, chlorine dioxide also has proven useful to combat another troublesome source of tastes and odors—the algae or simple water plants that thrive in many reservoirs. Finally, chlorine dioxide aids in stabilizing concentration of residual chlorine in water mains. Such traces of chlorine are maintained in potable waters for the purpose of overcoming any infection that may gain access to the water between the time it leaves the treatment plant and the time it reaches the user. By completely destroying at the treatment plant all organic matter present in the water, chlorine dioxide prevents such organic material from later reducing residual chlorine by reacting slowly with chlorine in the water mains.

### *Pedagogically Speaking*

**T**HE huge enrollments which all colleges now face provide excellent opportunity, as well as a real need, to peer into the operations of the educational process, to re-examine the foundations upon which rests present-day teaching and to improve, wherever possible, the effectiveness of pedagogical methods. Such an examination is a continual process at the Institute as it is at all progressive educational institutions. Engineering education, in particular, is under constant scrutiny, for the sole aim of the American Society for Engineering Education is the betterment of pedagogy in the training of engineers. Harvard's "General Education in a Free Society" is also indication of the seriousness with which the general problem is being examined.

In spite of such constant and persistent efforts at continual improvement, there occasionally arises such a



clear-cut statement of objective analysis that it bears widespread dissemination. Such were some of the remarks made by A. A. Potter, '03, Dean of Engineering at Purdue University, at a symposium on engineering education held at Princeton University in celebration of that institution's bicentennial. "Teaching," says Dean Potter, "is an art, not a science. As an art, teaching is individual. The teacher is a member of an idealistic profession, and, like the artist or the musician, does his best work in an environment which is pleasant and which frees him from worries. The higher the rank of the teacher, the greater is his responsibility for true scholarship, and for the guidance of others."

In judging the effectiveness and ability of teachers Dean Potter places stress on the following points: (1) The teacher must know his subject thoroughly, thereby instilling confidence in his students; (2) Through mastery of the English language and by speaking so as to be easily heard and understood, the teacher must present his subject clearly and effectively; (3) He must have certain desirable traits of character and personality which command respect of his students, and, at the same time, inspire them and bring forth their best efforts; (4) His general education and cultural background must command the respect not only of his students, but also of his academic colleagues and neighbors.

A teacher must be, first of all, a person of character, so that he can instill sound character and appreciation of ethical standards in his students. It is not enough for him merely to purvey known facts about the strength of materials or an outline of organic chemistry; character development and preparation for good citizenship are major objectives of all education. It follows that an individual who has low ethical standards has no place in an educational institution. One who condones dishonesty, deceit or trickery, or one who evades the laws of the land, even in spirit, is not a good citizen; he can never be a good teacher. A teacher who lacks sincerity, who bluffs or exaggerates, is a detriment to any educational institution. His cleanliness, dependability, punctuality, accuracy, mental honesty, industriousness, conscientiousness, and his professional status and cultural attainments are easily detectable characteristics of a worthy addition to any faculty. Dress and appearance are other means by which a good teacher may be judged.

A teacher's self-control, optimism, and patience are other important indications of his effectiveness; so also are his clearness of exposition, his patience, his optimism, and his tact. An individual who is sarcastic, conceited, snobbish, profane, antagonistic, or, worst of all, one who is intolerant, is naturally precluded from being a good teacher. His attitude toward his students, his academic associates and superiors; the manner in which he speaks of the institution he serves and its policies also mark the teacher, to his benefit or detriment. Whether the individual is really interested in his work or whether he is merely a time-server also have an important bearing on a person's relations to his students and his employer.

Unbounded and contagious enthusiasm is an important characteristic of a good teacher. The great teacher radiates enthusiasm to those about him by the sparkle of his eyes or the vibrance of his voice. His students are fascinated by his general animation and by his interest in the subject he teaches. His enthusiasm does not have to be judged by visiting his classes.

## *Petroleum through Radioactivity*

WHILE the original materials which form petroleum are generally agreed upon, the method by which these compounds were converted from the extremely complicated organic chemicals (present in the original living matter) into the relatively simpler compounds of petroleum is still a subject of much debate.

Most living matter, both animal and vegetable, is very complicated chemically and contains atoms of oxygen, nitrogen, and some small amounts of others, in addition to carbon and hydrogen. On the other hand, petroleum consists largely of carbon and hydrogen and any explanation of its formation must account for the elimination of the oxygen and other elements from the original material.

Recent research into possible mechanisms for this transformation has indicated that radioactive energy supplied by naturally radioactive materials may have been the cause of the change. By subjecting organic materials containing oxygen atoms in their make-up to the action of particles from the cyclotron beam or from a radioactive substance, such as radon, it has been found possible to remove the oxygen atoms from the larger molecule and transform it into a simpler hydrocarbon such as is found in petroleum.

Thus far the workers in this field have confined themselves to simple organic acids and have had considerable success in changing these compounds into hydrocarbons by removal of the oxygen in the form of carbon dioxide. The original compounds have been subjected to the action of radium emission and to the action of the beam from the cyclotron. The radium emission lends itself more readily to quantitative experiment but the greater amount of energy available from the cyclotrons has enabled them to process larger amounts of material and to achieve a conversion, from the original compound, of as high as three per cent. These conversion figures mean relatively little because a conversion of only one per cent of the organic matter in the earth around an oil pool is sufficient to account for all the oil present.

The work has now progressed to the point where it is planned to take samples of the earth from what is believed to be a potential oil pool, extract the organic matter from it, and subject this to the action of the cyclotron beam. None of this has yet been done but by reasoning from previous successful experiments there is every cause to believe that a substantial portion of the organic material will be converted into heavy hydrocarbons greatly resembling crude oil.

Speculation concerning this work leads immediately to the interesting possibility that a solution of this naturally occurring material might be used as a coolant in a uranium-plutonium pile and thus be subjected to radiant energy of a type and intensity sufficient to convert some of it into hydrocarbons. While this speculation is not necessarily idle it is far removed from actual fact. It is, however, an indication of the possibilities which may some day be achieved through large-scale exploitation of controlled atomic energy.

At present it is considered of more importance that this work lead to a greater knowledge of the mechanism of the formation of petroleum and by use of this knowledge enable man to search out existing deposits in a more intelligent and successful manner.

By JOHN G. GIBSON, 2D  
and ROBLEY D. EVANS

# Radioactive Blood Cells

## *Physics Aids Medical Research in War Program Leading to New Methods of Transporting, Storing, and Preserving Whole Blood*

FOR the past 12 years, nuclear physicists have been able to produce in their laboratories a slow release of usable amounts of atomic energy by transmuting stable atoms of the ordinary chemical elements into artificially radioactive forms of the same or different elements. The atom-smashing experiments of the physicists, carried out in many laboratories throughout the world in a co-operative quest for a better understanding of nature, have produced a new scientific tool, artificial radioactivity, which already has found wide applications in all fields of science and technology.

Biologists and physicians quickly saw that many of their unsolved problems might yield to attack with this new tool. Physicists took time out from their studies of fundamental problems in nuclear physics to collaborate with workers in the life sciences in basic studies of the process of living. In the hands of these teams of scientific investigators in the physical and biological sciences, the use of artificial radioactivity has resulted in a series of medical discoveries and in the development of new therapeutic techniques which already during the war have saved many thousands of lives.

The use of atomic energy did not interest statesmen or congressional committees in the 1930's when these discoveries were being made. But the sober truth is that through medical advances alone, atomic energy has already saved more lives than were snuffed out at Hiroshima and Nagasaki.

One example of a co-operative team attack by physicists, physicians, and radiochemists is in the application of radioactive iron to fundamental studies of the behavior of human red blood cells, and to the war-medical problem of preserving whole blood during and after shipment half way around the earth. This work could not possibly have been concluded successfully by physicists alone, or by physicians alone, but by intimate co-operation between workers in several widely different fields of science, results of fundamental importance in medicine were quickly achieved. In developing and applying the physical methods, physicists found solutions to several problems in pure nuclear physics as well.

The modern era of blood transfusions was ushered in by the discovery of human blood-cell groups at about the

turn of the century. This made it possible to select donors whose cells were compatible with the blood of the patient, without danger of reactions. The methods used were direct methods, that is, the blood was transferred directly by various means from the donor into the recipient's blood vessels, without the use of an anticoagulant. Blood transfusion was a surgical procedure requiring trained teams and careful attention to asepsis. The introduction of the use of sodium citrate as an anticoagulant in 1915 avoided the hazards of clotting in the interval between drawing and administering blood, and yet permitted the observance of aseptic precautions.

### **Blood Preservation of Recent Origin**

The first successful preservation of human whole blood was accomplished in 1916 by Rous and Turner<sup>1</sup> by the addition of dextrose to the sodium citrate anticoagulant. This solution was used to a limited extent in World War I by Robertson,<sup>2</sup> but during the interval between the two world wars, the majority of blood transfusions given in this country and in England were of freshly drawn, citrated blood. It was not until 1937, with the advent of economical mechanical refrigerators, that the first blood bank was established in this country. Blood was taken in simple citrate solution, and was kept for only a few days.

Interest in better blood preservation than could be obtained with citrate solutions was awakened in the years immediately preceding World War II, and greatly accelerated by the actual advent of hostilities. As casualties in the Mediterranean Theater mounted, it became obvious to the commanding medical officers that plasma, which had been relied upon entirely for the replacement of lost blood, could not replace lost red cells. Whole blood was necessary for

*About 63 per cent of the Pacific casualties (more than 100,000 persons) received blood furnished by donors in the United States and supplied under the program reported in this article. The dating period was 21 days, but in routine use at Guam the Navy found it possible to use blood up to 28 days for military casualties, and for as much as 35 to 40 days for civilian cases in the Philippines. Such practice is not followed except under unusual cases, but the Navy's experience illustrates the success of the program conducted by members of the Committee on Medical Research, Office of Scientific Research and Development. It also illustrates the benefits which may accrue when two branches of science join hands in co-operation to meet man's needs.*

the prevention and treatment of shock, since all wounded men suffer varying degrees of external or internal hemorrhage. During the early days of fighting the practice had been to obtain blood from donors in rear echelons for treatment of troops in base hospitals or for advanced

<sup>1</sup> Rous, P., and Turner, J. R. "The Preservation of Living Red Blood Cells in Vitro," *Journal of Experimental Medicine*, 23:219 (1916).

<sup>2</sup> Robertson, O. H. "Transfusion with Preserved Red Blood Cells," *British Medical Journal*, 1:691 (1918).



hospitals. This constituted an unnecessary and sometimes dangerous drain on the health of supporting personnel. Furthermore, it did not seem possible that the increasing demands could be met from the civilian population in the British Isles.

The obvious large source of whole blood was the United States, but to obtain this blood required transportation across the Atlantic. This, in turn, necessitated preservation for a period of at least three weeks, in view of the uncertainties of transportation and the delay incident to distribution to front areas.

Among the earliest workers in America in the field of blood preservation was DeGowin,<sup>3</sup> of the University of Iowa. This worker modified the original Rous-Turner solution, and observed clinically that the addition of dextrose to sodium citrate prolonged preservation considerably. Subsequent work by British workers, Loutit, Mollison, and Young,<sup>4</sup> had revealed the fact that acidification of the solution by means of citric acid further improved blood preservation.

While the beneficial effects of dextrose and acidification were recognized, the necessary facts upon which to base a military overseas blood program were, in the main, not known in 1940. The rate at which cells deteriorated during storage, even in the best solutions, had not been satisfactorily determined. The rate at which these deteriorated cells broke down in the recipient was not known, and the degree of hemoglobinemia to be expected following a transfusion of blood of a given age was a matter of conjecture. The ability of the individual to handle large amounts of plasma hemoglobin was an uncertainty, although the association of hemoglobinuria and renal damage was recognized. There was no knowledge of the degree of normal functional activity retained by those cells not rapidly eliminated after transfusion, nor to what extent the blood-building substances of the destroyed cells would be reutilized. The effect of mechanical agitation incident to transportation on survival of cells was unknown. Refrigeration was considered necessary, but optimal storage temperatures had not been determined. The extent to which cells would remain viable in any solution for a given time under conditions of transportation and refrigeration was unknown. And finally, no one could say just how a normal, or more important, a seriously wounded human, could withstand an improper transfusion. Therefore, the standards of acceptable transfusion of stored

<sup>3</sup> DeGowin, E. L., Harris, J. E., and Plass, E. D. "Studies on Preserved Human Blood. I. Various Factors Influencing Hemolysis," *Journal of the American Medical Association*, 114:850 (1940); "II. Diffusion of Potassium from the Erythrocytes during Storage," *Journal of the American Medical Association*, 114:855 (1940).

DeGowin, E. L., Harris, J. E., Bell, J., and Hardin, R. C. "Osmotic Changes in Erythrocytes of Human Blood during Storage," *Proceedings of the Society of Experimental Biology and Medicine*, 49:484 (1942).

DeGowin, E. L., Hardin, R. C., and Swanson, L. W. "Studies on Preserved Human Blood. IV. Transfusion of Cold Blood into Man," *Journal of the American Medical Association*, 14:859 (1940).

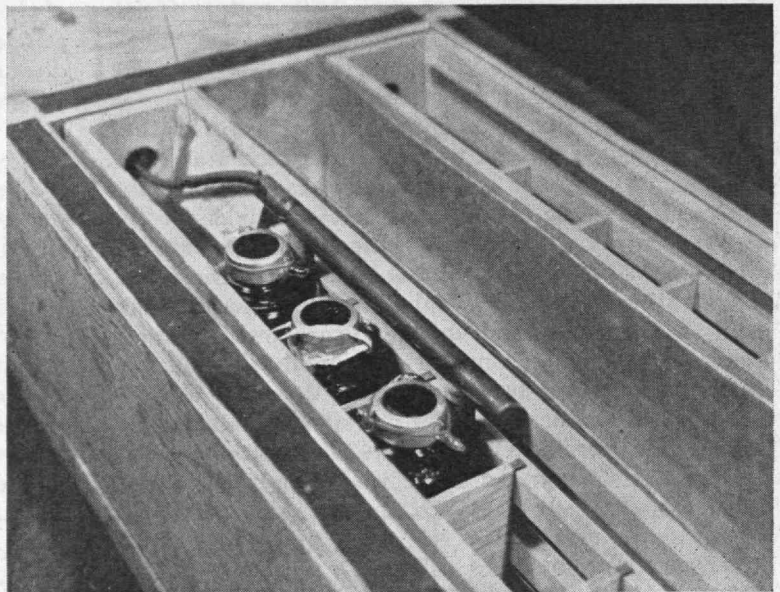
DeGowin, E. L., and Hardin, R. C. "Studies on Preserved Human Blood. VI. Reactions from Transfusion," *Journal of the American Medical Association*, 115:895 (1940).

<sup>4</sup> Loutit, J. F., Mollison, P. L., and Young, I. M. "Citric Acid-Sodium Citrate-Glucose Mixtures for Blood Storage; Report to Medical Research Council from Southwest London Blood Supply Depot," *Quarterly Journal of Experimental Physiology*, 32:183 (1943).

blood or the maximum safe period of storage could not be defined.

Numerous *in vitro* tests had been applied to the study of blood preservatives. Changes in osmotic fragility of the stored red cells, changes in the cellular dimensions, and the rate of hemolysis of cells during storage, had all been measured. There was, however, no general agreement that these observed *in vitro* characteristics bore any relation to the extent to which these changes were reversible when the cells were returned to the blood stream. It therefore became necessary to make direct *in vivo* measurements of the post-transfusion survival of stored human erythrocytes.

Such direct studies had been made by the agglutination test of Ashby.<sup>5</sup> In this method, Group O cells are administered to a Group A recipient. A sample of the recipient's blood is then treated with anti-A or anti-B sera, which agglutinates the recipient's A cells. The residual unagglutinated O cells are then counted by the ordinary blood-counting techniques, and the percentage of transfused cells which survive after transfusion is



Temperature-sensitive element of the recording thermometer fixed in position in proximity to bottles of whole blood for aerial transportation. Note the dioxane indicators fastened to the bottle necks.

thus directly measured. The technique is laborious, and there are several inherent sources of error.

### Radioactive Iron Traces Blood Cells

Since early in the course of the war, a group of physicians at the Harvard Medical School, and physicists of the Department of Physics at M.I.T. had been working under contract with the Office of Scientific Research and Development, conducting experiments to follow the course of the blood volume in experimental and clinical shock. The techniques employed utilized two radioactive isotopes of iron, and were based on the observation of Hahn<sup>6</sup> that, when intravenous radioactive iron is

<sup>5</sup> Ashby, W. "The Determination of the Length of Life of Transfused Blood Corpuscles in Man," *Journal of Experimental Medicine* 29:267 (1919).

<sup>6</sup> Hahn, P. F., Ross, J. F., Bale, W. F., and Balfour, W. M. "Red Cell and Plasma Volume (Circulating and Total) as Determined by Radio Iron and by Dye," *Journal of Experimental Medicine*, 75:221 (1942).

administered to a donor subject, the iron becomes incorporated in the hemoglobin molecule as it is synthesized within the developing red cells. As these cells mature and are delivered to the circulating blood stream, their presence may be detected as long as those cells remain intact within the circulation. Thus, these tagged cells could be injected into a recipient, and if they were perfectly preserved, their observed dilution would serve as a basis for measuring the recipient's circulating red-cell volume. It soon became apparent that in addition to measuring red-cell volume, the method easily could be adapted to the measurement of the actual survival of the transfused cells themselves.

A radioactive form of iron,  $\text{Fe}^{59}$ , emitting beta rays and having a half period of 47 days, is formed by the transmutation of cobalt metal through neutron bombardment. In the course of this work a new radioactive isotope of iron,  $\text{Fe}^{55}$ , was produced by the transmutation of manganese through deuteron bombardment. This new isotope has a half period of about five years, and in its radioactive decay the atomic nucleus of  $\text{Fe}^{55}$  captures one of its

were purified radiochemically and synthesized into ferric ammonium citrate.

When radioactive ferric ammonium citrate is injected intravenously into animals or humans it is rapidly removed from the blood stream. A large portion of the iron is retained in the body tissues concerned with iron storage. Hahn *et al.*<sup>7</sup> gave ferric ammonium citrate to dogs, and assayed liver and spleen for both ferritin and radioactive iron, and found a relatively high level of radioactivity in the ferritin iron. It therefore seems highly probable that the radio-iron becomes intimately mixed with all of the body iron stores which are present at the time of the isotope injection, and hence is made available for hematopoietic needs.

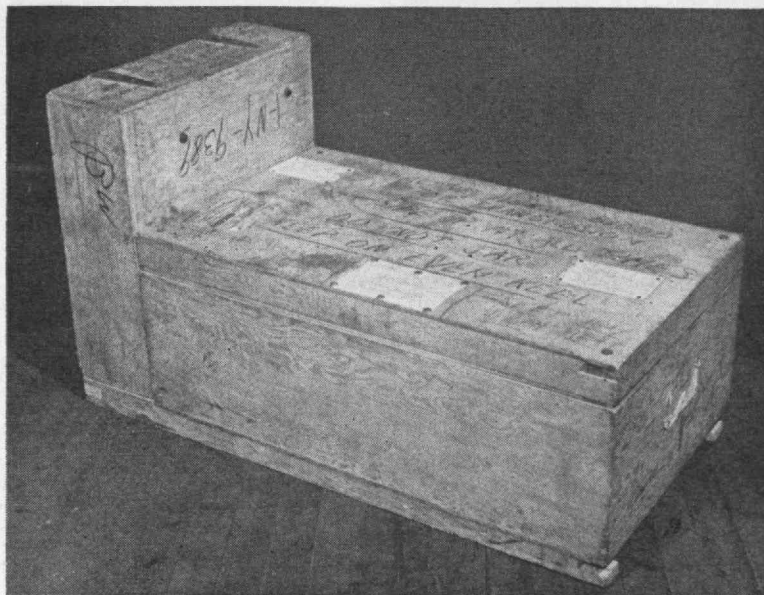
It is generally believed that hemoglobin is "laid down" inside the developing erythrocyte. If some of the iron atoms involved in this synthesis are radioactive, a proportionate number of them will become an integral part of the new hemoglobin molecule within the newly developed cell. When the cell is released into the circulation, its presence in the blood stream can be detected as long as it remains morphologically intact. When the tagged red cell is destroyed, its hemoglobin derived iron is very rapidly removed from the plasma, to be re-used, to some extent at least, in the synthesis of new hemoglobin.

In general, each red cell contains approximately 0.1 per cent iron, or about a thousand million atoms of iron. In the radioactive donors, between one and ten of these iron atoms contains a radioactive nucleus, although the vast majority of the iron atoms in each red cell are ordinary stable iron atoms.

It has been demonstrated experimentally that there is no exchange of the radioactive iron in the red cells, either with plasma *in vitro* or *in vivo*, or with saline *in vitro*. Thus the method differs in important respects from the labeling of red blood cells by absorbed carbon monoxide or by adsorbed radioactive phosphorus. It furnishes a specific method of detecting the advent of new red cells, and to a certain extent, of following their fate in the circulation, and the disposition made of their contained iron.

The normal human erythrocyte is thought to have a life expectancy of about 100 days. Within this period it is possible to estimate the age of the oldest tagged cell in the circulation of a subject who has been given radio-iron. When these cells are removed from circulation some part of their contained radio-iron will eventually re-enter the circulation in the hemoglobin of new cells. If this "turnover" be allowed to continue for a sufficient period of time, the tagged cells will be of all ages from birth to death, or representative of a "mixed age population" of cells. The administration of the alternate radioactive isotope of iron at such a time will result in the production of new cells, the presence of which can be differentiated from the presence of "mixed age cells." Thus the behavior of young and old cells may be studied in the same subject.

<sup>7</sup> Hahn, P. F., Granick, S., Bale, W. F., and Michaelis, L. "Ferritin: VI. Conversion of Inorganic and Hemoglobin Iron into Ferritin Iron in the Animal Body. Storage Function of Ferritin Iron as Shown by Radioactive and Magnetic Measurements," *Journal of Biological Chemistry*, 150:407 (1943).



Rugged refrigerators were required to assure the safe transportation of whole blood by air. How well the experimental model survived the round trip between Boston, Mass. and Oakland, Calif. is shown here.

orbital atomic electrons to form a stable atom of manganese. This radioactive transition gives rise only to the emission of the soft characteristic x-radiation of manganese, whose energy of only 5.9 kilovolts gives it very little penetrating power and renders detection difficult.

New types of Geiger-Müller counters were developed, to afford optimum detection sensitivity for  $\text{Fe}^{55}$  and at the same time to give substantially no response to the beta rays of  $\text{Fe}^{59}$ . Conversely, other counters were developed which respond only to  $\text{Fe}^{59}$ , and not to  $\text{Fe}^{55}$ . These new instruments, together with automatic sample changing apparatus, made it possible to use both isotopes,  $\text{Fe}^{55}$  and  $\text{Fe}^{59}$ , in the same experimental subjects. Thus, one isotope was used to measure the normal red-cell volume of a subject, and the other isotope was employed to measure the degree of survival of transfused red cells in the same individual. Thus, each individual acted as his own biological control. Both forms of radioactive iron,  $\text{Fe}^{55}$  and  $\text{Fe}^{59}$ , produced by the M.I.T. cyclotron,



The use of radioactive iron in the blood stream was given long and careful consideration. Radioactive iron ( $\text{Fe}^{55}$ ) administered to the donors was prepared as ferric ammonium citrate. Since the radio-iron was of very high specific activity, it was possible to obtain very high radioactivity levels in the donor's red cells by the administration of extremely small quantities of iron (as little as one milligram) and it required only from 10 days to two weeks to activate a donor. Using sterile precautions the donor was then bled into the preservative solution under investigation. This blood was then stored under varying conditions of temperature, and for varying lengths of time, before being transfused. Just prior to the administration of these stored bloods, the recipient's circulating red-cell volume was determined by means of a small infusion of red cells tagged with  $\text{Fe}^{59}$ . The preserved cells were then administered, and samples were withdrawn for radioactivity analysis. Since the recipient's pre-transfusion circulating red-cell volume had been measured, and since the quantity of transfused stored red cells tagged with  $\text{Fe}^{55}$ , as well as the activity of these cells, also was measured, the percentage of post-transfusion survival could be simply calculated from the  $\text{Fe}^{55}$  radioactivity level of the recipient's blood. If the stored cells had been well preserved, the great majority of them remained in the recipient's circulation, as evidenced by the fact that the recipient's radioactivity level did not appreciably change during the course of observation, which in some instances was prolonged for as much as 21 days. If the stored cells were poorly preserved, the recipient's radioactivity red-cell level progressively fell, at varying rates, reaching a low point usually within the first 24 hours after the receipt of the transfusion. This low point was used in computing the maximum survival of the preserved cells. Thereafter the recipient's red-cell radioactivity almost invariably rose. Since the only source of radioactivity was the tagged blood which had been given, it was apparent that this rise represented a re-utilization of the hemoglobin iron released from the cells which had not survived. These observations had no direct bearing on survival, but were important in the final evaluation of blood transfusion as a therapeutic measure.

All recipients and donors were carefully blood grouped. The majority of the donors were Blood Group O, and the recipients were of all four blood groups. All donors and all recipients were Rh positive.\* All bloods were carefully cultured prior to administration. A few reactions occurred, characterized by chills and fever, and it was thought that these were due to accidental contamination of the blood with pyrogens, since no bacterial contamination was demonstrated. There were mild reactions characteristic of massive destruction of blood cells in those experiments in which extremely old bloods had been administered. None of the donors, however, showed any results which could be attributed to the effects of radiation of the isotopes administered. In the course of this work, 60 donors were prepared and almost 200

*Average blood consumption is about one pint per casualty. At Okinawa, for example, 42,000 pints of blood were used for 42,500 casualties. In individual cases, however, the amount of blood transfused may greatly exceed the average. The record appears to be held by one man who was given 30 pints of blood in 48 hours; a second man received 12 pints in 12 hours, and a third, 41 pints in 38 days.*

recipients received transfusions of tagged cells. These subjects have been followed for a minimum of one year and as long as five years, and none of them has shown any effects which can in any way be attributed to radiation. Their blood picture has remained normal, and regeneration of blood withdrawn

from the donors has occurred at normal rates.

This method offers a very accurate measure of the percentage of transfused stored cells which resume their full functional capacity and remain intact in the recipient's blood stream for the residue of their normal life expectancy of about 100 days. The accuracy of the method is dependent in a large measure on the use of two isotopes of iron, the first,  $\text{Fe}^{59}$ , for the measurement of the recipient's red-cell volume, and the second,  $\text{Fe}^{55}$ , for tracing the actual fate of stored human erythrocytes after transfusion.

### Survival of Blood Cells

In addition to studying the fate of red cells stored and administered as whole blood, experiments were conducted to determine the post-transfusion survival of red cells from which the plasma had been removed by centrifugation. In the early experiments various diluents were added to these packed cells immediately after centrifuging, in the hope that a suitable solution for the preservation of red cells only could be found. This was very desirable, since at the time the American Red Cross blood program was in operation in many large cities in the country. This blood, it should be recalled, was taken primarily for plasma, or for fractionation of plasma, and at no time during the war was any considerable use made of the residual red cells.

A large number and variety of preservative solutions both for whole blood and resuspended cells were studied by the techniques described above. These may be classified as follows for whole blood: (1) Simple solutions of sodium citrate. (2) Sodium citrate solutions to which dextrose had been added. These solutions remain alkaline. (3) Sodium citrate solutions to which dextrose and phosphate buffer solutions had been added. These solutions also are alkaline. (4) Sodium citrate solutions to which dextrose and citric acid had been added, the latter in amounts to lower the pH to 6.8 and 5.0. The ratio of diluent to whole blood taken varied considerably in the alkaline sodium-citrate-dextrose solutions but was much lower in the acidified citrate solutions. The solutions for resuspension of red cells were as follows: (1) Normal sodium chloride. (2) Citrate-sodium-chloride solutions buffered with phosphates and hydrochloric acids of pH's ranging from 6.8 to 3.8. (3) Sodium-citrate, sodium-chloride dextrose solutions to which a human globulin, Fraction IV-3, 4, had been added. (4) 10 per cent corn syrup. (5) Solutions, consisting of various concentrations of sodium chloride and dextrose, which were added just prior to the transfusion of the red cells after they had been stored in the refrigerator as packed cells.

In the whole blood experiments it was found that simple sodium citrate did not permit preservation of red cells for a period beyond five days. Two (Continued on page 124)

\* A popular explanation of this term has been given in the article, "Rh Factor" *Life* magazine, June 10, 1946, pp. 139-145.

# Rockets in Battle

BY WILLY LEY



Acme Photo

*Modern version of rockets in battle is this photograph illustrating British anti-aircraft rocket projectors used in 1944 to keep German bombers from completing assigned missions over England.*

**A**FTER centuries of painstaking development, restricted for long periods by the technological limitations of the times, progress in rockets took a big step forward during World War II. Although military necessity was the incentive for this progress, the knowledge gained is, of course, equally applicable to the furtherance of man's civilian objectives if he but chooses to direct his efforts into such channels. Certainly it is to be anticipated that the progress in the efficiency of propellants, in aerodynamical stability, in increased range and precision of flight which has recently been attained, will further man's peaceful, rather than military, affairs. Since the past proclaims the future, the most effective way of assuring the furtherance of such objectives begins with a review of previous development and applications, for warfare as well as for amusement, through which reaction-propelled missiles have already passed.

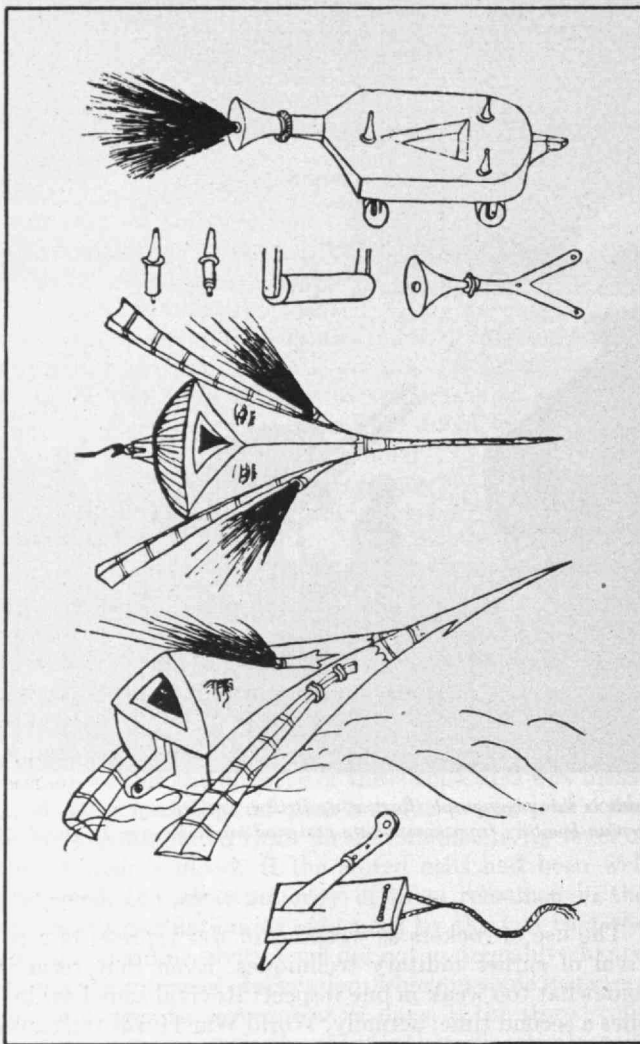
Memorialized in our national anthem, "the rockets' red glare" is not merely a figure of speech, despite the limited use of rockets during the past century. The reason why World War II brought about a new realization of the importance of these airborne devices is merely that it gave the first example in more than a century in which rocket projectiles played an important role. The Russians used several types of bombardment rockets, at least one of them manufactured in Tennessee; the British had their Z-guns throwing rockets against German bomber formations; in addition to the long-range rocket A-4 (V-2), the Germans had several types of *Nebelwerfer* and *Wurfgerät* and dozens of experimental types. In addition to the well-known bazooka, our own fighting forces had a total array of 24 types of rockets, the biggest weighing some 1,200 pounds. Their characteristics are summarized at the end of this article.

The use of rockets as weapons of war represents a revival of earlier military techniques. Even that term is somewhat too weak in one respect: Revival somehow implies a second time; actually, World War II was the cause for the third wave of war rockets in military history. The first wave followed soon after the invention of the rocket, about 1200, and lasted, with sporadic applications, for about two centuries. During the second wave, which began at the end of the Eighteenth Century and lasted for about two decades, the well-known lines in our national anthem were written. The third wave comprises World War II. Between 1813 and 1940 there had been no major use of war rockets. A few occasional applications did take place during this interval, but these were more of a curiosity than an indication of a trend. In fact, what use was made of rockets in the century of this country's greatest development seemed to indicate that the trend ran the other way. The Nineteenth Century war rocket appeared to be the last survival of the second wave of development, a last hissing flickering of a past glory. It was as anachronistic in the art of war of 1866 or of 1915 and 1916 as the mammal platypus and the fish *Latimeria* are to the zoology of 1946.

## Rocket Origins

There is no need to devote much time or space to the first wave of war rockets. Historical research has shown that the rocket was invented in China around the year 1200. Indications are that the first rocket was developed gradually from the fire arrows by substituting gunpowderlike mixtures for other kinds of incendiaries formerly attached to fire arrows. This, at least, is how the French Sinologist, St. Julien, read the Chinese chronicle in question. According to his translation three "secret weapons"





*Drawings from the sketchbook of the Italian "war engineer" Joanes de Fontana, about 1420. The top diagram illustrates a rocket-propelled car with detail sketches indicating that three rockets are to be used. A rocket-propelled naval torpedo, painted as the head of a sea monster, "to deceive the enemy" is shown in the center. The bottom sketch shows a piece of board forming the stabilizing tail of the torpedo in the manner of a kite tail. Presumably the dagger forced through the board is to indicate that it is made of wood.*

made their appearance simultaneously during that famous siege. One of them was a bomb, a powder-filled, metal container which was lowered by means of chains from the walls of the city. The second was a spear with a crude Roman candle tied to its tip and appropriately named "the lance of the storming fire." The third secret weapon was the "arrow of flying fire" which was stated to "suddenly fly away in a straight line." The third weapon obviously was a weapon similar to a fire arrow and rocket, but more nearly resembling the latter.

Some 20 years later, war rockets were known to the Arabs and, almost simultaneously, to the Europeans. The chronicle of the city of Cologne (for the year 1258) mentions them, and several writers of that time, including such famous clerics as Roger Bacon and Albertus Magnus, made reference to rockets in their works. Regarding what we now call tactical employment, the descendant continued the work of its ancestor; rockets were used in the same manner as the older fire arrows; in fact, they were often used in conjunction with fire arrows.

By 1550 rockets had lost much of their military value

and were used primarily as fireworks for amusement only. As a weapon they survived only at sea, where the tarred rigging of the sailing vessel offered a rather large and easily inflammable target. War rockets might still be a neglected possibility had it not been for the princes of Mysore in India who, almost two centuries ago, ordered their artisans to increase the size of fireworks rockets and then set about to train special units of their extensive bodyguards in the use of such rockets. When the British attacked the Indian city of Seringapatam just before the dawn of the Nineteenth Century, the war rockets of the princes of Mysore dealt them a crushing reverse. The British, it seems, had learned that the thundering sweep of a massed cavalry attack was the simplest means of crushing native resistance. But horses were vulnerable to the flashing streaks of oncoming rockets, and they shied from the violent roar which often resembled the groans of a gigantic animal.

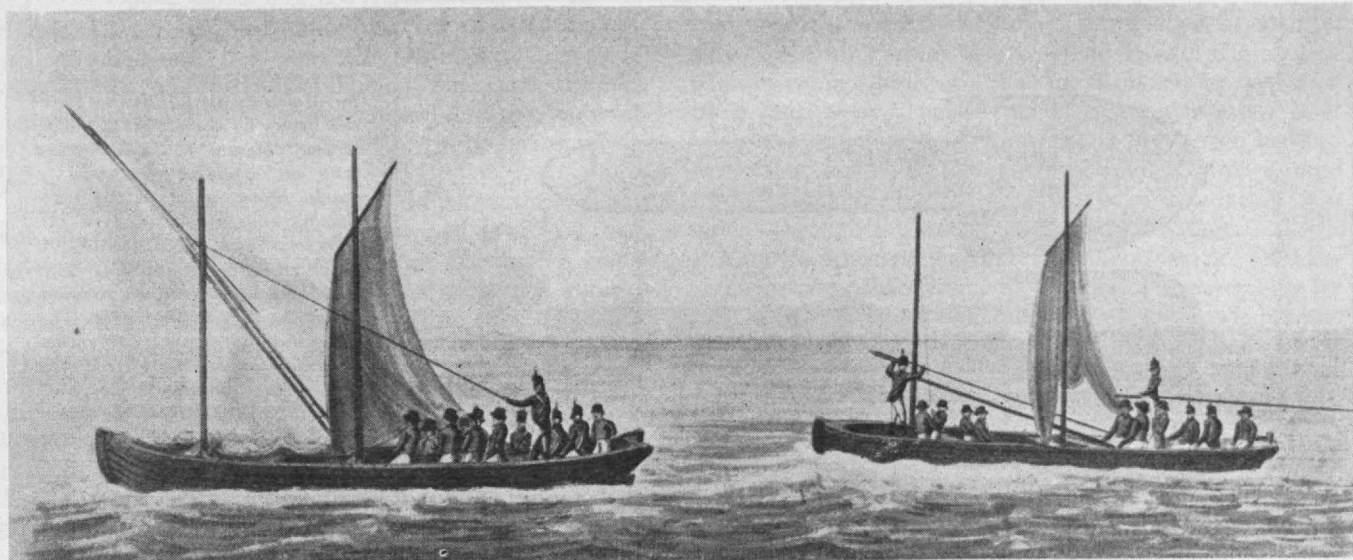
### Breakdown of Trade Secrets

When the news of the Indian war rockets reached England, William Congreve, a young artillery officer, made the rounds of London shops, trying to purchase rockets. He found some, made presumably for signaling purposes, examined them carefully, and then fired them in order to establish their performance. The range of the English rockets was between 500 and 600 yards, less than half that of the Indian war rockets, but the examination had shown that improvements were possible. After some work, in the course of which Congreve discovered and partly discarded most of the trade secrets which the fireworks makers had guarded so jealously, he produced rockets with a range of about 2,000 yards, more than enough to compete with most of the artillery of that day.

In 1805 the improved rockets were demonstrated for the first time, but they were not successful in actual use later in the same year. The initial failure seems to have been merely the result of poor employment and small expenditure, for only one year later Congreve's war rockets, equipped with incendiary warheads, set afire a large section of Boulogne. Another year later, in 1807, a mass use of 25,000 rockets caused Copenhagen to burn to the ground.

Danzig was forced to surrender in 1813 because Congreve rockets set the food stores afire, and the big battle of Leipzig, which sealed Napoleon's fate, also saw British war rockets in effective action during the preliminary maneuvering.

Congreve himself was elated. He called his rockets "the soul of artillery without the body" and wrote several treatises extolling their virtues. These treatises now read very much like the more recent explanations on the advantages and disadvantages of rocket fire which were written for civilians during World War II. Round for round, rockets were noticeably heavier than other ammunition, but they did not need heavy artillery pieces for their firing. They could be launched from light metal tubes, even from wooden launching racks if necessary, and, if everything else failed, temporary makeshifts, assembled on the battlefield, could be used. Furthermore, a much higher density of fire could be achieved for short intervals of time than with guns of any type. The complete absence of recoil is another valuable characteristic of rockets which Congreve used to advantage, firing rockets



British rocket boats, 1816

from special, and rather small, rocket boats which could not have carried guns.<sup>1</sup>

The advantages of war rockets could not be realized as fully in Congreve's time as they could be realized a century later. Even in the early Nineteenth Century, however, a variety of uses were apparent, as can be seen from the tabulation of rockets manufactured in the British arsenals.

The tactical use of rocket weapons was in the hands of the Rocket Corps, an independent branch of the British services. Austria, Greece, and Russia followed suit by creating similar independent rocket corps. Denmark, Egypt, France, Italy, the Netherlands, Poland, Prussia, Sardinia, Spain, and Sweden created rocket batteries

<sup>1</sup> In World War II, the absence of rocket recoil was utilized to build airplanes with firing power considerably greater than that obtainable from the more usual ordnance.

which were part of their artillery. The Swiss Rocket Corps was intended to be independent and was nicely organized down to the smallest detail, but only on paper. The United States Army had rocket batteries, too; military historians in Washington are still hunting through archives in an attempt to find out whether they were independent or classified as artillery batteries.

### The Decline of Rockets

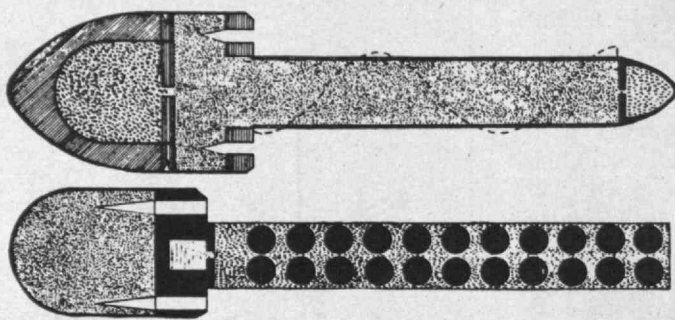
The organization of rocket corps in the countries enumerated above took time. It took even more time to manufacture rockets (although many countries bought them from Great Britain) and to get down to tests and to target practice. When things had progressed to this point, it dawned on those in charge that the artillery had made such mighty strides in the meantime as to make rockets superfluous. The new guns outranged the

### Early Nineteenth-Century Rockets Manufactured by British Arsenals

Weight and Designation	Type of Projectile Carried	Extreme Range (Yards)	Elevation for Extreme Range (Degrees)
42-pound Carcass Rocket*	Large: 18-pound carcass Small: 12-pound carcass	3,000	60
42-pound Shell Rocket	Large: 12-pound spherical bomb Small: 5½-pound spherical bomb		
32-pound Carcass Rocket	Large: 18-pound carcass	2,000	60
	Medium: 12-pound carcass	2,500	55-60
	Small: 8-pound carcass	3,000	55
32-pound Shell Rocket	9-pound spherical bomb	3,000	50
32-pound Case Shot Rocket	Large: 200 carbine balls	2,500	55
	Small: 100 carbine balls	3,000	50
32-pound Explosive Rocket	5-12 pounds of gunpowder	2,500-3,000	55
12-pound Case Shot Rocket	Large: 72 carbine balls	2,000	45
	Small: 48 carbine balls	2,500	45
Flare Rockets	With parachute		90

\* The now fairly obsolete term "carcass" refers to a thin-walled metal container filled with incendiary substances. In the case of the Congreve rockets, the incendiary material produced a biting and choking smoke prohibiting the approach by would-be fire fighters.





*Improved war rockets as proposed by Montgéry in his book *Traité des fusées de Guerre* (1825). The upper diagram shows a rocket with an explosive charge in a fairly heavy metal casing with driving charge contained in the tube serving as a guiding stick. A ridge running around this tube was supposed to impart rotation about the longitudinal axis. The lower diagram shows a war rocket in which the guiding stick is also tubular and contains a charge of powder and lead balls. It seems unlikely that such rockets were actually tried.*

rockets considerably, and they offered the additional advantage of being much more accurate. In all the enthusiasm about Sir William Congreve's new weapon (the "Sir," like the "General," was a late addition to his name), the inherent drawbacks of rockets had been overlooked.

Rockets were not quite as safe to handle as guns, they deteriorated much more rapidly in storage than artillery ammunition, and they were not accurate. At first, both guns and rockets had been equally inaccurate. Now guns were less inaccurate than before, and at that time everybody wanted accurate fire against single enemy units. The concept of area beating was the last tactical thought that would occur to any officer. It was probably not even gentlemanly to think of such a method.

The many rocket corps were quietly disbanded. The Austrian Corps had the longest life but followed the way of all the others after it had produced a rather miserable performance against the Prussians in 1866. Some two dozen formerly secret treatises were quietly declassified and began to appear on the general library shelves under "military." The Civil War was fought without rockets.

The British kept war rockets with solid steel heads on the list of issue weapons. They were issued only to the Colonial Services who did not know what to do with them. It seemed that war rockets might be good for incendiary purposes, but there are in print reports of colonial officers relating that such rockets, fired at native grass huts, penetrated without igniting them. Once again the value of rockets was reduced to the level of fireworks.

During World War I only one serious military application of rockets was made. French pilots used large, naval, signal rockets to set afire German captive balloons which served as artillery observers. That was all.

### Fashion and Technology

There can be little doubt that to a certain extent the rather extreme fluctuations of rocket popularity were due to something which, for want of a better term, may be called fashion. Certainly there were instances in which the proper use of rockets might have shortened wars. During the Civil War, Atlanta would have been less of an obstacle to Sherman if some 20,000 Congreve rockets had been at his disposal. In the Franco-Prussian war of 1870-1871 several situations arose in which Congreve rockets

could have played an important role. Certainly it would not have required much work during World War I to utilize an adaptation of the French signal rockets for ground strafing and possibly even for antisubmarine use.

The greater part of those curious fluctuations of the rocket's history can be traced to technological causes. Again, the smaller part of the technological causes has to be sought in the technology of the artillery weapons. Twice in the course of history firearms experienced a period of considerable improvement just at the time when war rockets were advocated and in use. Even World War II offers such an example: The war rocket was employed for uses in which the absence of recoil was the main consideration and the comparative lack of accuracy could be accepted because no more accurate recoilless weapon was available. It is not unreasonable to believe that the modern recoilless gun will replace rockets in such applications.

The main reason, however, for the periodic reappearance of the war rocket was the technological improvement of the rockets themselves. An examination of methods of manufacturing rockets will indicate why the Congreve rockets, highly useful for several years, lost their advantage when manufacturing limitations prevented further technological improvement.

We do not know how the rocket makers of the period between 1250 and 1350 made their rockets. We can only surmise that they made the best gunpowder they knew how and stuffed it into their casings as tightly as they could. The Chinese, we know, used bamboo for those casings; a German manuscript dated 1405 stated that the casing was a tube of stiff leather.

### Rocket Manufacture

By about the year 1500 rocket manufacture had settled down to a routine. The propellant was a black-powder mixture of the following recipe: First, gunpowder was prepared by mixing six parts (by weight) of saltpeter with one part each of charcoal and of sulphur. The finished gunpowder was then carefully mixed with another two parts of charcoal to decrease its burning speed. The casing was made of many layers of thin paper pasted together in the form of a hollow cylinder. While still wet, the casing was choked by means of a soaped string applied from the outside, to produce a constriction in the cardboard

tube so that it resembled an hour glass. Two wooden plugs with rounded ends prevented the pasteboard tube from collapsing beyond the choked portion. The restriction was placed one tube diameter from one end and the diameter of the aperture thus formed was two-thirds of the inside diameter of the tube.

Then, each time the tube was filled by about one diameter, the powder mixture was first tamped down and then hammered in with "twenty-five strong blows." A trade secret of the time called for the insertion of a conical iron spindle in the shorter section of the tube, from the end to the constriction so that the powder cylinder resulting from the hammering had a conical center hole. Only the top section, about two tube diameters in length, was solid. The purpose of the conical center hole was to increase the burning surface, since the normal cross section of the tube could not produce enough combustion gas to lift the rocket.

The rocket, completed according to the above directions, would have been unstable in flight. To overcome this defect, a long, thin guiding stick was provided which, although representing a great deal of dead weight, could not be dispensed with.

When Congreve examined rockets made in this manner (the intervening 300 years had not brought any changes) he reasoned that the most obvious improvement would be a higher condensation of the black-powder mixture. He knew that the specific gravity of the propellant in such handmade fireworks rockets, of the order of 1.25 to 1.30, could be increased by using smaller portions of black powder. But there was a safety limit. When the rocket was hammered too hard it would explode for the reason that the air trapped between the powder particles may be heated enough by compression to ignite the powder.

It was possible to avoid this danger by wetting the black-powder mixture with alcohol. The alcohol, which contained some 30 to 35 per cent water, not only replaced the air to a large extent but also absorbed a great deal of the heat of compression. Consequently, Congreve rockets were made by using this so-called "wet procedure." The higher compression naturally required stronger cas-

ings, and the pasteboard tube was replaced by an iron tube, something which the rocket makers of the princes of Mysore had done, too. The hand mallet was replaced by a drop weight, hoisted by muscle power after each blow. Congreve's competitors and imitators even went so far as to place the rocket casing to be loaded into a large tub containing water, so that the powder mixture was cooled through the walls of the metallic casing.

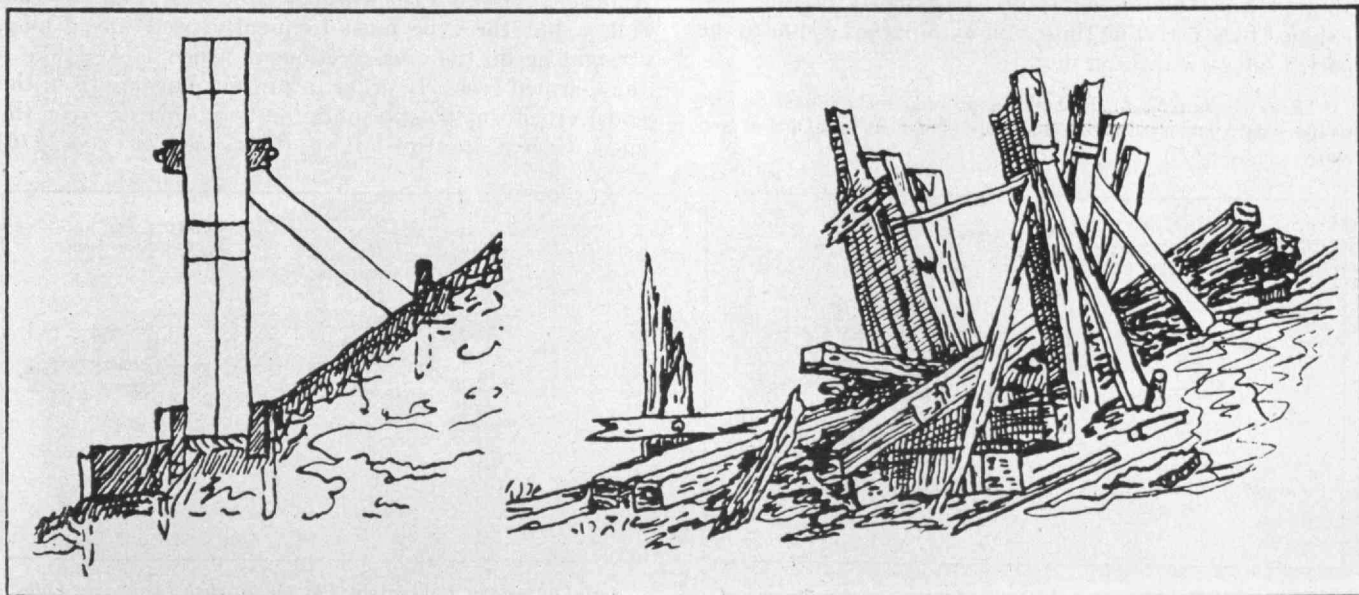
Another improvement upon handicraft was to load the rocket casings solidly and to produce the center hole by boring and reaming. With all these refinements it became possible to increase the density of the propellant to 1.5 and even 1.6 and to make larger rockets than ever before. But the possible limits were reached within less than a decade; no further improvement was possible.

### Fragile! Handle with Care

After these rockets had been made they required a great deal of skilled care. In the first place, it was necessary to dry them carefully — a process requiring several weeks — and then they had to be handled and stored with utmost caution. A black-powder mixture compressed to a density of 1.5 or thereabouts is, unfortunately, very brittle, and even a minor concussion, or a sudden change in temperature, is apt to form fine cracks in the propellant. Even now it might still be exceedingly difficult to devise a method for detecting such cracks; it was a completely hopeless problem a century ago. It is these fine cracks which lead to explosions, for when the flame reaches such a crevice it works its way into the crack, causing a sudden increase in the amount of combustion gases generated.

The increase in the generation of gas is only one of the dangers to be expected from the fine cracks in the propellant. Usually a lump of propellant is worked loose by the flame entering a crack. If the lump is small enough to pass the exhaust nozzle, it may be discharged without further consequence, but if it is large enough to block the exhaust nozzle, even momentarily, a bursting of the casing is a certainty.

The fissure of the propellant was a difficulty which fireworks makers could not circumvent. Even as late as 1928 the most carefully made high-compression rockets were



*Published originally in a French military manual, about 1825, this drawing illustrates the effect of a Congreve rocket with explosive charge upon striking a target wall erected of oak planks about six inches thick.*



still subject to explosion because of such cracks. By then a highly developed technology, using hydraulic presses and ingenious methods of cooling while loading the rocket, had succeeded in compressing especially stable black-powder mixtures to densities of 1.80 and 1.85. The number of explosions on the proving ground was 10 to 15 per cent of those tested. In spite of all the precautions the manufacturer could think of, failures rose to about 40 per cent, in some cases to 80 per cent, when rockets were transported less than 200 miles.<sup>2</sup>

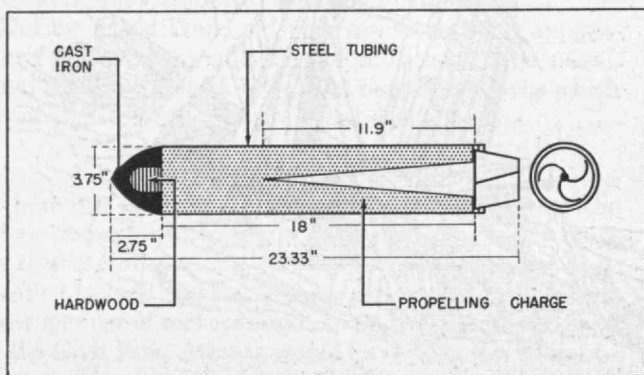
These are the reasons why the second wave of war-rocket development initiated by Congreve rather quickly exhausted the technological possibilities of the times and why the only rockets available between 1850 and 1920 did not exceed two inches in diameter. By keeping the rockets relatively small and the density of the propellant fairly low (about 1.35) the danger of cracks could be greatly reduced. Even so, failures of five per cent were expected every time a given batch of rockets was shipped, and, in addition, for every month of storage, failures rose another one per cent. The actual number of failures was not quite so bad.

### Some Sidelines

Naturally such rockets could not be expected to do more than carry signal lights as a routine job, but occasionally they did perform other feats. Experiments, generally unsuccessful, were made with rocket harpoons, but the line-throwing rocket, a direct descendant of the Congreve war rocket, was standard equipment for rescue crews at the seashore. Used when a vessel had been stranded within a few hundred yards of the shore, it carried a line to the vessel, by means of which a heavier line was hauled across and finally a breeches buoy attached to the line. In Switzerland similar rockets were used to lay temporary telephone wires across the steep slopes of wooded mountain slopes.

But there were no war rockets left, except those British Colonial Service rockets with solid steel head. They were based on the invention of an American, William Hale, who in 1846 succeeded in eliminating the dead weight of the long guiding stick. Hale did this by placing three curved metal vanes in the exhaust nozzle. The exhaust blast, striking those vanes, imparted a spin to the rocket which stabilized it.

<sup>2</sup> These figures refer to the high-compression rockets used in 1928 in the widely publicized rocket automobiles of Fritz von Opel in Germany.



A 24-pound British war rocket, one of the many forerunners of the Bazooka. The diagram appeared in the official British Treatise on Ammunition of 1905.

To sum up the *status quo* of the years following World War I: The solid propellant rocket was handicapped by a practical maximum size beyond which rockets became too dangerous, both in manufacture and in use. This maximum size was too small to be of military use, however, and hence there were no war rockets.

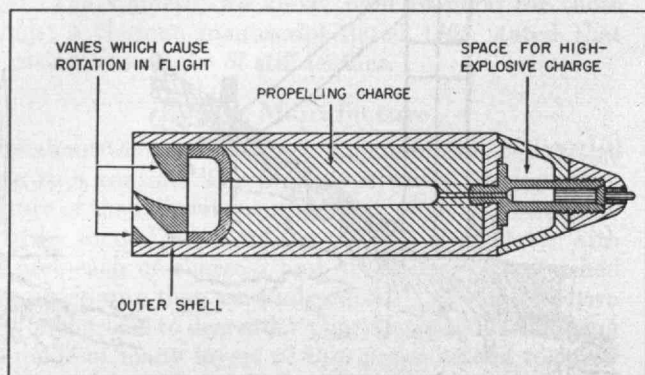
To anybody who clearly realized these things, a possible solution became apparent very quickly. It was "only" necessary to find a solid propellant which, while at least as powerful as black powder compressed to a density of 1.8 or higher, would not be brittle and hence not crack. The smokeless powders, some of which are actually flexible, suggested themselves.

### Improved Propellants

But there was a long, difficult road between the conception of this idea and its practical realization. It was necessary to form smokeless powder into rods large enough to burn for as long as two seconds and shaped in such a way that the rate of burning would be more or less uniform. There were two basic methods. The American method involved the use of a solvent. The smokeless powder, derived from guncotton and nitroglycerin with other chemicals added, was made into a thick black paste from which the powder rods were then extruded. The extrusion process worked well and involved little danger, but because of the need for drying the solvent out of the "grains," no great thickness of material was possible.

The British had developed a dry extrusion process for their rockets in which dry cordite was rolled into sheets, which were then wound into tight rolls and extruded through dies. At first, dry extrusion was considered rather dangerous in this country, and not without justification. Ultimately, it was adopted, however, and finally most American war rockets were propelled by fuels made by dry extrusion. In this method, grains were formed, some of which were as much as five feet long and four inches thick with a maximum weight of more than 40 pounds apiece.

Three types of grains were in use. One was simply tubular, like thick-walled tubing. Each rocket propelled by such grains received a fair number of them. Another type was a thick-walled tube with three external ridges, but the type most frequently used was a long, straight grain, the cross section of which looked like a thick-armed cross. In order to prevent burning from the ends, cruciform plastic inhibitors were placed over the ends. Except for the largest (Continued on page 116)



Aerial torpedo of 1906 invented by the Swedish Lieutenant Colonel Baron von Unge and bought from him by Friedrich Krupp in Essen. Experimental models weighed as much as 110 pounds.

# Post-Industrialism

AS a way of life industrialism can hardly be expected to remain unchanged for in our machine technology we have inherently a science of change. Machine technology is a unique system of mankind for no other system has ever made change the mechanism of survival.

It is a paradox that in industrial societies, little attention is paid to the question of how long or how much an entity can change and still retain its identity. That industrialism should undergo far-reaching, continuous modification without sustaining a basic transformation is a logical contradiction. Yet, the prospect that modern industrial people might live in a post-industrial society is likely to appear to them as fantastic. Every age has its utopia, and the machine civilization we know so well is ours. Our entire outlook on life and our philosophy of history and the future are identified with machine technology as we have known it.

If we pause to reflect, however, we can remember easily enough that there have been many pre-industrial civilizations and that industrialism itself is a product of a long, ceaseless, cultural evolution. Logically, therefore, we might expect a post-industrial civilization.

Unfortunately, the concept of post-industrialism is likely to frighten industrial people. It is a term freighted with emotional protests and suggests a counter-revolution

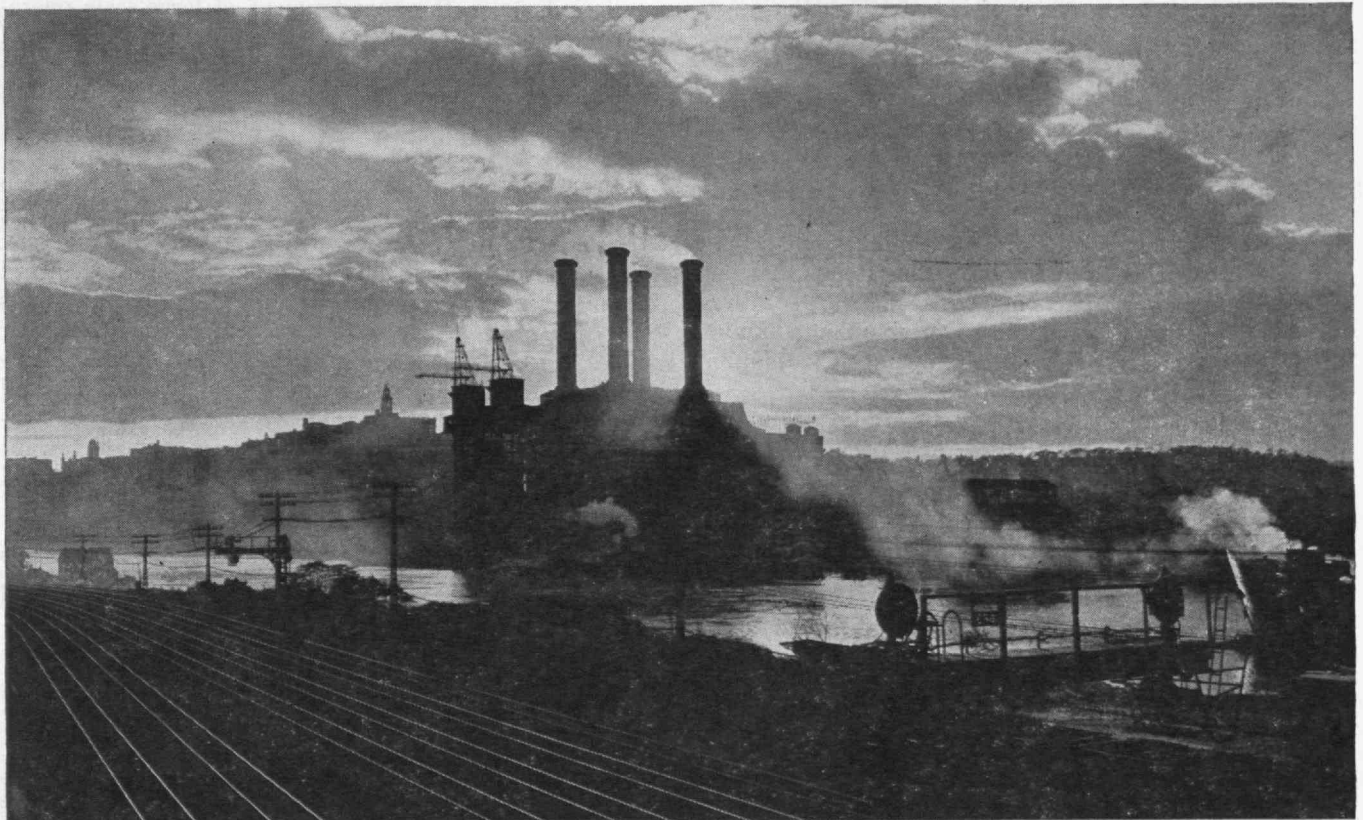
## *The Ebb and Flow of Human Affairs Now Work Against Centralized Bigness*

against the machine. For example, out of a revulsion from Nineteenth-Century English industrialism the arts and crafts movement in Victorian England sought to achieve a revival of the handicraft arts in the name of certain aesthetic standards of craftsmanship. Because of the abuses of "the system" industrialism has revolted its share of prophets and poets.

Yet post-industrialism is really a much calmer word than the example above seems to indicate. It suggests a new system of industrial technics, evolved out of the old, and already present in many forms; it refers to reaction tendencies generated by industrialism itself. The literature rejecting Nineteenth- and early Twentieth-Century industrialism reveals the focus of this new industrial culture.

### **The Language of Industrial Protest**

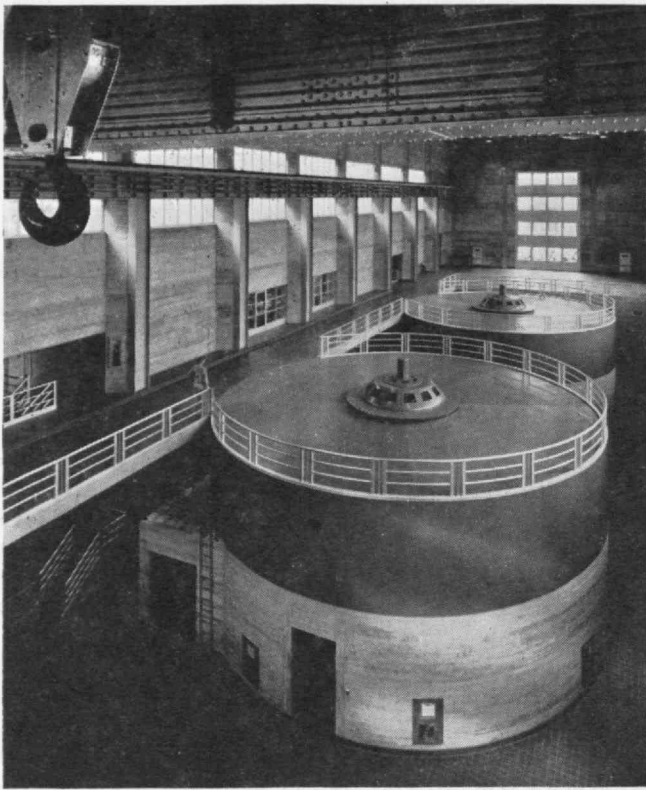
In a negative sense, post-industrialism represents a protest against the trends in concentration and enlarge-



*Photo by H. Armstrong Roberts*

*The centralization of electrical power generation has made dispersion of industry, people, and institutions both necessary and possible.*





*The technological mastery of electrical power — hardly more than a half century in service — represents a new industrial revolution in which decentralization is likely.*

ment of industrialism. It expresses a dissatisfaction with the forms of industrial life as we have known them; it is tired of big business, big industry, big cities, big labor, and big government. Lewis Mumford has called the current but disappearing phase of industrialism the paleotechnic stage. It is an epoch of industrial development the central feature of which has been shapeless, sprawling giantism. The "sensate industrial town," as Mumford terms it,<sup>1</sup> is the epitome of massed and massive mechanization. The tentacular metropolis is the temple of a paleotechnic (industrial) civilization, and the center of its adoration of sheer size.

Even before the advent of the nucleonic age and atomic warfare, it was clear to many discerning minds that bigness is a transitory phenomenon. Following Malthus' famous concept, it was possible to perceive that a number of negative checks were already operating to inhibit further increase in size.

The modern "megapolis" is a paradox. Mumford calls it "an outstanding example of a peculiar cultural lag within the realm of technics itself; namely, the continuation by advanced neotechnic means of the forms and ends of paleotechnic civilization."<sup>2</sup> The giant industrial community suffers from congestion, and sheer size has imposed severe limitations upon it. There are the physical limits of water supply, sewage disposal, traffic control, physical distance. There are the economic limits of increasing costs, frozen price pyramids of land rents and mortgages, civic depletion, urban blight. There are the social limits of population density, complexity of organization, loss of social control, institutional impover-

ishment, and loss of vitality. In a word, the industrial city has had to come to terms with the familiar principle of diminishing returns.

"At any given time and in any given condition of industrial technique," said Alfred Marshall, "there is likely to be a point, beyond which further increase in size gives little further increase in economy and efficiency."<sup>3</sup> Both in business and industry, as well as in social life, size becomes self-penalizing. Thus, the larger the plant, the more fixed the capital and the more restricted the adaptability. Bigness maximizes the problems of administration, and, as a corollary, of bureaucracy also. It breeds bigness, for the greater the fixed costs, the greater the drive toward expansion in order to cover costs. Indeed, bigness has become a kind of social insurance institution for enterprisers and managers who, unfortunately, have their premiums paid by the consuming public. The rule of massed mechanization, which has been the passion of industrial people, has run counter to the law of diminishing returns. Herein lies the hope of post-industrialism.

Positively, post-industrialism is a culture pattern focused on the tendency of decentralization which has already been set in motion by the forces of industrial society. The utopia of the post-industrial age still depends greatly upon the machine but differs from our present era in that the post-industrial machine operates in a decentralized setting. Post-industrialism is a decentralized way of life; its key word is decentralization.

Writers on decentralized technics are not in agreement on what is being, or should be, decentralized.

A topographic school of decentralists talks about the dispersion and expansion of business enterprises, the movement of business units to the urban fringe, branch plants, suburbanism, and rural industries. A structural school of decentralists refers to the development of small-scale industries, the abandonment of large-scale operations, regional industries for regional markets, and small community enterprises. An organic school of decentralists speaks glowingly of a flight from the city, back to nature; it concerns itself with homestead projects, cooperative and self-sufficient communities, the rejection of urbanism, or the dispersion of population. Each group of writers makes out a different case for decentralism: the first, a statistical case; the second, an economic one; the third, sociological. The first group feels that the word decentralism is perhaps too strong to describe the trends it sees in process. The other two groups argue that their types of decentralism represent the fruition of real liberalism, the realization of genuine human values. But all groups agree on the fact that a reversal of Nineteenth-Century industrialism is on the way; a movement toward smaller, dispersed, more manipulatable technical and social forms is on foot.

### **Post-Industrialism: The Inner and Outer Structures**

It is imperative that the possibility of a post-industrial culture should not be made to rest upon the wish-fulfillments of industrial protestants. Post-industrialism is not an imaginary construct; quite the contrary.

A post-industrial culture is coming into being by the same process that produced industrialism, i.e., via machine technology. Elsewhere it has been pointed out that industrial civilization is based on the principles of science

<sup>1</sup> *The Culture of Cities* by Lewis Mumford. (New York City: Harcourt Brace, 1938, page 145.)

<sup>2</sup> *Op. cit.* page 235.

<sup>3</sup> *Industry and Trade* by Alfred Marshall (London: Macmillan, 1927, page 249.)

and that it centers around the machine as a system of controlled efficiency. Indeed, our shorthand expression for the industrial economy is "the machine," by which we connote not only the use of science for the elaboration of a machine technology but also the concept of automaticity through disciplined power. The impetus toward post-industrialism originates at this point — the point of power. For post-industrialism, unmistakably a power age, is based on a historically novel source of power — electricity.

Electricity has given industrial people a new technical base, one which is exemplified in such forms as the dynamo, the motor, and the power transmission line. Through radio and wire methods of communication, electricity has made possible the seclusion of human beings without their isolation. Indeed the technological mastery of this source of power — hardly more than half a century in service — represents a new industrial revolution. The power sources and machines of the older industrialism required concentration of machines, materials, man power, and markets. Such is distinctly not the case with the new industrialism.

Paradoxically, centralization of electrical power generation has made dispersion of industry, people, and institutions both necessary and possible. Electric power is a concentrated form of energy which requires no concentration of population or industry. From its widespread availability flow a number of technical and social sequences. Smaller and more flexible factories are made possible, production revolves around more flexible machine arrangements, and remote control of industrial operations becomes possible and necessary. Automatic manufacturing becomes of increasing importance and a new type of industrial worker emerges — the inspector, switch-thrower, or dial-watcher. Many, if not most, of the remaining industrial operations may be further mechanized. Ultimately a new kind of technological unemployment arises: the disemployment of the machine itself. Mobility and reduction in prime costs and size of operations replace the older drive toward massed machine technics and personnel. The new system of industrial production promises to be as revolutionary as the one which we identify with the Nineteenth Century.

The productive system of the older industrial economy has evolved an outer structure of relations which is usually described in some such terms as the factory, the firm, the city. It should be expected that the productive system of the new industrial technology will inevitably introduce changes in this outer structure.

Enough statistical evidence is at hand to show that the factory system is already undergoing a significant series of changes. One of them, for example, is the diffusion of factory units; a diffusion which is paralleled by a similar translocation of business units. The study of population redistribution noted during the 'Thirties marked intra-regional movements. Sizable industrial and business relocation from large, congested nuclear cities to smaller communities in the peripheries was much in evidence.<sup>4</sup> The war has undeniably hastened this process. Part of the sequence is simply an addition of new locations to old ones in a general spreading-out of operations. Part of it is the development of new regional industries and markets. Part of it is a governmentally supported search for

<sup>4</sup> *Is Industry Decentralizing?* by Daniel B. Creamer. (Philadelphia: University of Pennsylvania Press, 1935.)

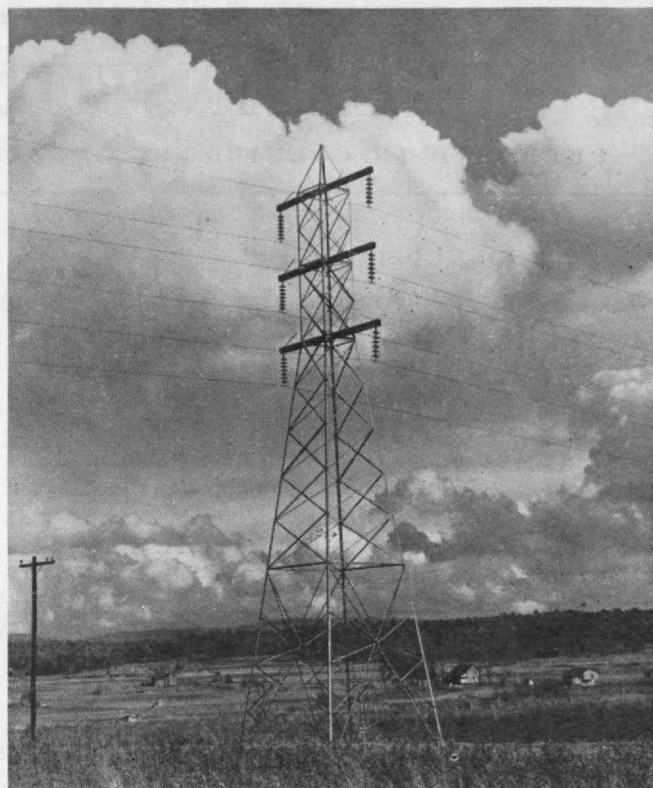


Photo by H. Armstrong Roberts

*Electricity has given industrial people a new technical base; one which is exemplified in such forms as the dynamo, the motor, and the power transmission line.*

industries and businesses which are peculiarly rural, or rural-urban industries.

Another modification in the outer structure of industrialism, also already in evidence, is the transformation of the pattern of community living. Study after study has shown that, in recent years, the giant central cities of industrialism are not growing at the rate which characterizes the growth of the metropolitan fringe communities. The suburb, a specialized segment of the industrial city, is a symptom of this community change. The main goals of movement are non-metropolitan.

Indeed, what is happening is the appearance of a new social pattern, in which the industrial city surrenders its dominance over the hinterland. Financial economy and technical mobility have diminished the need for close settlement at the same time that they have increased the possibility of physical movement. The centripetal city, as architect Frank Lloyd Wright calls it, is giving way to the centrifugal city, and a new bio-technical regionalism which seeks a life-conditioned (rather than a machine-dominated) environment for industrial people is coming into being.

### The Human Appraisal of Post-Industrialism

There have been sketched here only a few of the many aspects of the new industrialism. One of the most important aspects of all is the shift in human values which post-industrialism promises to make possible.

The massed mechanization of the older industrialism has tended to create more problems than it can solve. In *The Culture of Cities* Lewis Mumford commented on the paradox of modern metropolitan civilization. Large cities represent "the existence of a rational collective organization of the physical means of life (Continued on page 120)



# THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

## *Of Things to Come*

**H**ERALDING important changes in the executive management of the Alumni Association of M.I.T. and in the administration of the office of the Dean of Students, President Karl T. Compton and Harold Bugbee, '20, President of the Alumni Association, have announced the appointment of Dean H. E. Lobdell, '17, to the newly created position of Executive Vice-president of the Alumni Association of M.I.T. The Reverend Everett Moore Baker, D.D., minister of the First Unitarian Church of Cleveland and former Vice-president of the American Unitarian Association, will succeed Dean Lobdell as Dean of Students, and the Associate Dean of Students, Thomas P. Pitre, has been advanced to the new post of Dean of Freshmen.

In his new post, which he will assume January 1, Mr. Lobdell will have direct responsibility for administering the affairs of the Alumni Association and for serving as director of alumni relations for the Institute.

Professor Charles E. Locke, '96, will continue as secretary of the Alumni Association, which office he has graced for 16 years. Ralph T. Jope, '28, also will continue as treasurer of the Association and business manager of *The Review*, Henry B. Kane, '24, as director of the Alumni Fund, and Beverly Dudley, '35, as editor of *The Review*.

Emphasizing the import of the new executive vice-presidency in a joint statement with Mr. Bugbee, President Compton said: "The activities of the Alumni Association, which represents an influential group of nearly 37,000 former students, are constantly increasing and now require the full-time, active direction of an outstanding administrative officer. In appointing Mr. Lobdell as its first executive vice-president, the Alumni Association has taken a step which we are confident will be of great importance to the future development of the Institute and of equal value to our Alumni. As dean of students for many years and as publisher of *The Technology Review*, Mr. Lobdell has established extraordinarily wide contacts with M.I.T. Alumni and is ideally qualified by executive experience and knowledge of the Institute for a post of leadership in carrying out the plans of an expanding program of alumni activity.

"In addition to his responsibilities as executive officer of the Alumni Association, Mr. Lobdell will serve as adviser to the President of the Institute on all matters of alumni relationships."

The nomination of Dean Lobdell, which was unanimously adopted by the Executive Committee, was made by the Special Committee on Improving the Organization and Operation of the Alumni Association, of which committee Marshall B. Dalton, '15, was chairman. In their report, Mr. Dalton's committee said in part:

"Your committee has delayed its final selection because it was more interested in securing what it unanimously felt was the right man for the position than in the precise time for his appointment. In the original report, dated

April 24, 1944, your committee stated the following qualifications for the individual to be selected if such a person could be found:

"He should be an alumnus of Technology.

"He should be of sufficient maturity and accomplishment to command the respect of all age groups who should be interested in the future of the Institute, including potential students of Technology, undergraduates, graduate students, alumnae and alumni, and leaders of industry.

"He should be acceptable to the Institute Administration and capable of rendering them service.

"If possible he should have an intimate association with the Institute Administration and its staff, so that he thoroughly understands the organization, the operation, the aims, history and traditions of Technology.

"Your committee believes that Mr. Lobdell qualifies to an extraordinary degree on all of the above counts, and that the usefulness of the Alumni Association to its members and to Technology will be greatly increased by this appointment."

Member of the Institute's Class of 1917, Mr. Lobdell enlisted in the United States Army when this country entered World War I, and served as an infantry officer until the autumn of 1919 when he joined the Institute's staff and was appointed assistant to the director of the Division of Industrial Co-operation and Research, holding that office until he became assistant dean in 1921. He was editor of *The Technology Review* from 1922 to 1930 and since 1930 has been *The Review's* publisher.

Thus, for the past 25 years, Mr. Lobdell has been associated with the Dean's Office, the chief responsibility having been his since the death of Dean Henry P. Talbot, '85, in 1927. Since its establishment in 1930, he has been chairman of the Technology Loan Fund Board which has already administered loans of \$1,900,000 to some 2,600 Technology students. He remains head of the board of this important student aid fund.

In 1933-1934 Dean Lobdell was president of the National Association of Deans, and since 1933 has been national vice-president of Phi Kappa Sigma fraternity. His clubs are the St. Botolph and Engineers clubs of Boston, the Century, Collectors, University, and Technology clubs of New York, and the Army and Navy Club of Washington.

The appointment of Dr. Baker as Dean of Students, and of Mr. Pitre as Dean of Freshmen, will be marked by an expansion of the duties of the office of the Dean of Students which has authority and responsibility for overseeing all aspects of student welfare and for the Institute's relationships with student government and recognized student activities, including athletics and fraternities.

By advising and counseling with individual students and with student groups, the Dean's Office seeks to promote fine morale, high standards of conduct, and the best possible conditions for personal development and educational achievement; and in concert with regis-

tration officers and other agencies of M.I.T. to co-ordinate academic with personal counseling.

Dr. Baker brings to his new post broad experience in the field of education and administration and a thorough knowledge of the interest and activities of young people. He has been a lecturer in sociology at Cleveland College of Western Reserve University and a trustee of Proctor Academy in Andover, N. H. and of the Hawken School for boys in Cleveland. His own interest in outdoor activities and sports led to his association with boys' camps early in his career, and he has been active in this field for many years. He directed the boys' camp of the Boston City Missionary Society at Camp Waldron, Meredith, N. H. from its beginning in 1929 until 1935, and has since been associated with other camps.

A native of Newtonville, Mass., Dr. Baker was educated at Phillips Exeter Academy, and at Dartmouth College from which he was graduated with the degree of Bachelor of Science in 1924, and then carried on graduate

World War II, Dr. Baker was a member of the arbitration panel of the National Arbitration Association and a public panel member of the National War Labor Board.

In Cleveland, Dr. Baker took an active part in community affairs, serving on the board of trustees of the Welfare Federation of Cleveland and as a member of the board of directors of the Cleveland Church Federation. He was also a member of the board of trustees of the Cleveland Council on World Affairs. He has been chairman of the Better Housing Association of Cleveland and has been chairman of the board of directors of the National Consumers League for Fair Labor Standards. Dr. Baker was president of the Unitarian Ministerial Union from 1944 to this year and has been a member of the board of directors of the American Unitarian Association for several years. He is also a member of Delta Kappa Epsilon fraternity.

As Dean of Freshmen, Mr. Pitre assumes new and additional responsibilities for which his wide experience in



*Associated with the Dean's Office for the past 17 years, Thomas P. Pitre takes up new responsibilities with his promotion to Dean of Freshmen.*



*Dean H. E. Lobdell, '17, unanimously selected for advancement, becomes Executive Vice-president of the Alumni Association of M.I.T.*



*As Dean of Students, Dr. Everett M. Baker, rich in educational and administrative experience, continues a career long devoted to young people.*

work at the Harvard Divinity School, completing his studies there in 1929. In 1938 Tufts College conferred on him the honorary degree of Doctor of Divinity.

From 1925 to 1929, Dr. Baker was assistant minister of the Mount Vernon Church in Boston and the next eight years was minister of the Westminster Church in Providence, R. I. From 1937 to 1942 he was vice-president of the American Unitarian Association, the central executive body of Unitarian churches in the United States and Canada with headquarters in Boston. Since 1942 he has been minister of the First Unitarian Church of Cleveland, which he leaves to take up his new duties on January 1.

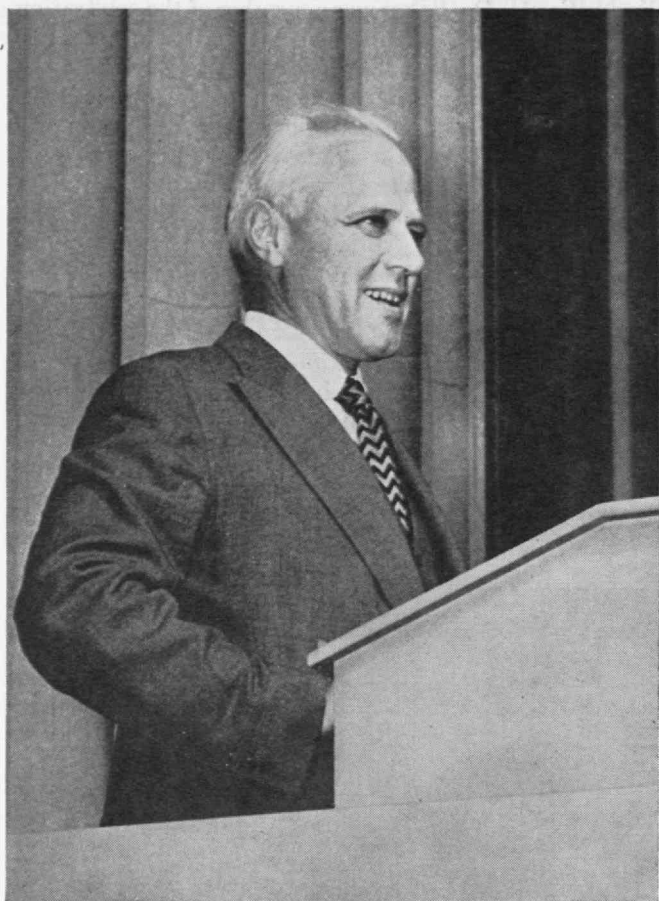
As vice-president of the American Unitarian Association Dr. Baker was engaged in general administrative work and directed the fund-raising program and the publishing business for that denomination. For three years he directed the New England Unitarian radio hour. In Cleveland he edited and published a book of readings entitled *Think on These Things* of which 3,000,000 copies were distributed to men and women in the armed forces. During

dealing with incoming students particularly qualifies him. A native of Waterbury, Conn., he was graduated from Amherst College in 1919, and he is an honorary member of the M.I.T. Class of 1917. During 1919-1920 he was an instructor in chemistry at Phillips Andover Academy, and was also an instructor in chemistry at M.I.T. from 1920 to 1930.

He was appointed assistant dean in 1930 and associate dean of students in 1939, and in each of these capacities he has been registration officer and chief adviser to freshman students for the past 17 years. He was the prime mover in originating and developing the current program of freshman scholarship awards, including the Regional Scholarships for which outstanding students have been nominated for scholarship aid by local alumni committees throughout the United States. He will succeed Dean Lobdell as chairman of the Faculty Committee on Undergraduate Scholarships.

Dean Pitre is a member of the American Chemical Society and also of the Delta Upsilon fraternity.





### *The President Reports*

**C**ONCERN for the educational welfare of the largest group of students ever to enter M.I.T. permeated President Compton's annual report, delivered to the Corporation on October 9. The Administration is not only facing the difficult problem of providing educational facilities and opportunities of the highest order for the largest enrollment in the Institute's history under uncertain postwar conditions but it must also recognize many new requirements of a student body whose make-up is quite different from that which has heretofore roamed collegiate halls. Of the 5,000 students enrolled, more than 3,000 are war veterans, and about 1,000 are married. At a time when the nation's housing shortage is, it is hoped, at its crest the avalanche of married students poses a problem in housing facilities which, although difficult, is being satisfactorily solved. "No student has yet had to sleep on a park bench," stated Dr. Compton during a convocation in the Great Court on October 8.

The student body has 267 representatives from foreign countries. To a large extent (almost two-thirds) it is composed of war veterans who have seen all parts of the world and return to their studies with a seriousness of purpose and a sense of responsibility which are unusually high. President Compton's statement recognizing the characteristics of the new student body may also be regarded as the keynote of his report to the Corporation: "Obviously a student body of these general characteristics and of such maturity, capacity, and determination is a challenge to our best efforts."

Although it will probably be at least three or four years before the Institute can return to a status from which the

traces of the war have been erased, the change from a wartime to a peacetime educational institution is making rapid strides. The transition is best reported in Dr. Compton's own words:

Fourteen months ago the Massachusetts Institute of Technology was a scientific arsenal, with a personnel of over 6,000 working on instrumentalities of warfare and 2,000 students largely training for warfare. In the period since V-J Day we have returned to our normal and primary function of education. The 6,000 employed personnel have diminished to 3,000 and the student body has increased to 5,000, the largest number of students ever enrolled at M.I.T. Fourteen months ago we were spending at the rate of \$50,000,000 a year; we have now readjusted to a more manageable but still inflated annual expenditure of \$11,000,000.

These figures are but ineloquent indices of the redeployment problems which have been met and, I am happy to report, largely solved. The Radiation Laboratory has been demobilized, its staff of 3,900 reduced to 15. Its great volume of purchase commitments, for months a matter of concern as it mounted million by million, is now almost completely liquidated, with a consequent reduction in liability and risk not to zero but to a point reassuringly near. Placement of wartime personnel has been largely accomplished. In fact, the demand for technical personnel has far exceeded our supply. The equipment used in the great war laboratories, the value running into many millions of dollars, the bulk running into uncounted tons, has been taken over by the Army and Navy, thus relieving the Institute of a burden which could easily have been a great handicap to reconversion. And, finally, the Institute space occupied by the war projects has been largely recaptured, and the temporary buildings, built primarily for war work, have been retained by the Institute to aid us in handling the postwar overload of students. With these major hurdles taken, we are in a much better position to meet the many other problems inherited from the war and inherent in the present period of readjustment.

For this rapid demobilization, credit is due many people — those who administered the projects and who planned for their liquidation with foresight and with a sense of fine responsibility to M.I.T.; those who, frequently at personal sacrifice, remained after the tumult and the shouting to assist in the liquidation; and the staff of our own Division of Industrial Cooperation, who have managed all contractual and business matters with prudence and vigilance.

### *The Institute Redeployed*

The transition to a peacetime program has been more difficult because we are far from having returned to the scale of operations typical before the war. To use a budgetary index again, our current annual budget of \$11,000,000 is three times our largest prewar budget. In 1939-1940 we had a total paid personnel, including staff and nonstaff, of 1,400. The current year finds us with 3,000, over twice as many. Total personnel at the Institute, including students, staff, and nonstaff, stands this fall at about 8,000, which is equal to our total personnel at the peak of the war program. Since the end of the war we have added 557 new persons to our instructional staff, of whom 57 have been Faculty appointments. To house the academic activities of this large group, we have found it necessary to occupy all the wartime buildings, with the result that we are using a plant — some of it temporary — greater by half a million square feet than that available before the war.

That these changes have thrown a great burden on both the administrative and teaching staff needs no comment, but one illustration will suffice. Before the war, about 1,000 new students were admitted to the Institute per year. Since July, 1945, we have been admitting approximately 1,000 students every four months, and over 2,300 students have been admitted for the fall term just begun. Thus there has been about a fivefold expansion in admission and registration activities, and these

have been carried on in circumstances of unusual pressure and complexity.

In terms of the prewar Institute we have therefore undergone a substantial expansion of our peacetime program. Part of this increase has come from new or continuing research financed by the Government, our research budget this year being of the order of \$5,000,000. The most significant increase, however, has been in the size of our student body and in the resulting educational responsibility we have assumed. Our research activities are still important to the national defense and welfare, but they are now geared to industrial as well as governmental needs, and are integrated with our educational program. I wish in this report to give principal attention to this educational program and to those aspects of our operation affecting the welfare of our students generally. . . .

### *College Student — 1946 Model*

The typical student was described as two to four years older than the pre-war student of the same class, having a poise and courtesy born of military experience. His objective is to obtain a first-class professional education as quickly as possible.

If the student of 1946 has been unable to find quarters in the dormitories, the Graduate House, the fraternity houses, or in the Westgate development for married students, or the barracks reconverted from one of the temporary war research buildings, he will have enlisted the aid of the Institute's Housing Bureau. Even then, he may be acutely aware of the national housing shortage. But, in respect to housing, the student at Technology is no worse off than some of the recent additions to the faculty or the administrative staff; relatively speaking, he may be much better cared for.

President Compton summarized the typical student of 1946 with the words: "Altogether you will gain the impression that he is able, personable, and sure of himself; that he has a well thought-out program for his education, is willing to work without stint to get ahead rapidly, and is competent and anxious to undertake larger tasks than a pre-war student of equivalent scholastic age." President Compton continued:

In this roughly sketched profile of the 1946 undergraduate, you have observed some of the special characteristics of the students now enrolled at the Institute. Taking the student body as a whole, we find that 3,000 of the 5,000 students are veterans

and 3,700 are undergraduates, the remaining 1,300 being registered for postgraduate degrees. The undergraduates are almost evenly distributed among the four classes, with the senior class running slightly smaller.

The new students, both veteran and nonveteran, represent a degree of selection quite beyond that of any group ever before admitted. The 675 new freshmen who have just entered, for example, were chosen out of some 4,500 applications and many times that number of inquiries. About 2,300, or 80 per cent, of the undergraduates who were on leave of absence for war service are now back, and we expect ultimately to readmit nearly 100 per cent of these former students. Since the educational expenses of the veterans are financed largely by the Government, applicants have not been restricted by financial considerations. The students, therefore, come from all walks of life, and for the first time we have a student body for which ability, preparation, personality, and character have been the only requirements for admission.

The postgraduate student enrollment represents an increase of about 550 over our pre-war Graduate School enrollment. The majority of these graduate students are being assisted by employment on research projects or by appointment as teaching assistants. Some of our departments, in fact, having found it necessary to increase their graduate student quotas in order to get the assistants needed to handle the undergraduate enrollment. Many of these graduate students have had extensive experience in war laboratories or in teaching and are therefore highly competent to undertake teaching or research of a high order while they study. . . .

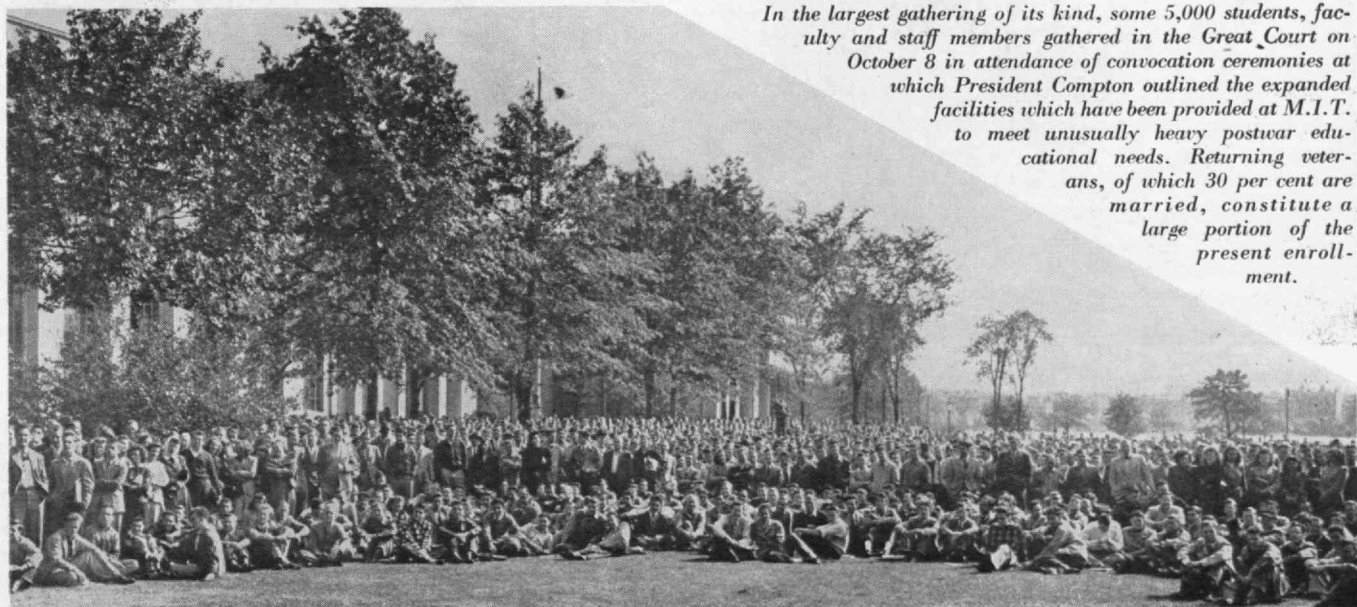
Of the 5,000 students, there are 267 from foreign countries. Because of the overwhelming demand of American veterans, we have had to limit severely our acceptance of foreign students, although the demand from foreign countries has increased.

### *Standards of Scholarship*

The recovery of high scholastic standards which, regrettably, could not always be maintained during the uncertainty of the war years, is being effected rapidly. Facilitated by the careful screening of all student applications by the Admissions Office, a big factor in this recovery is the maturity, serious purpose, and innate ability of the present student body. Dr. Compton said:

Another factor that has expedited the recovery of scholastic standards has been the rapid reassembly of our staff; we have had fortunately few losses in senior personnel. Moreover, we

*In the largest gathering of its kind, some 5,000 students, faculty and staff members gathered in the Great Court on October 8 in attendance of convocation ceremonies at which President Compton outlined the expanded facilities which have been provided at M.I.T. to meet unusually heavy postwar educational needs. Returning veterans, of which 30 per cent are married, constitute a large portion of the present enrollment.*





have been exceedingly fortunate in securing outstanding additions to our staff, both to fill vacancies and to provide for the larger student body. Taken either as a whole or department by department, and including the new and the old, I can say with pride and good conscience that this 1946 staff is unexcelled anywhere in the world in professional competence, reputation, loyalty, co-operation, and industry. Given the proper facilities it can without question meet the challenge . . .

The chairman of the Faculty has presented to the Faculty Council a proposal for a fundamental review of our present emergency program and, more importantly, a long-range study of our entire educational policies and procedures. This would be in line with past practice of periodically re-evaluating our educational objectives and methods . . .

If the proposal is adopted, as I trust that it will be, it will be the responsibility of this committee, with Faculty directive and advice, to formulate the scope and objectives of its study, but I think we can anticipate some of the matters which it will review: Do our admission requirements need revision, and can they be better co-ordinated with programs in the secondary schools? Are we too specialized in our undergraduate program in the upper two years, and is our Course system the most effective organization? Is it now possible to give a reputable and effective engineering education in four years? What should be the relative emphasis on undergraduate and postgraduate education, and how should they be related to each other? Have we swung too far in the direction of theory as distinct from practice, or have we not gone far enough? Have we yet allotted enough time for humanistic studies? Do we require too much routine and scheduled work, leaving our students too little time for self-development? No answers are presupposed to these questions, but the questions do indicate the comprehensiveness of the committee's assignment . . .

As the Faculty adjusts and tunes the delicate and complex organization of our undergraduate school, it is also looking out in new directions. The new Department of Food Technology launched its program during the year with financial assistance from six industrial companies, and the Department of Economics and Social Science organized a new undergraduate program in Economics and Engineering. The Department of Metal-

lurgy, jointly with Chemical Engineering, undertook a new program in corrosion, and the Department of Mechanical Engineering transferred to Metallurgy its personnel and facilities in metal processing, where they are to provide the nucleus for a new program in mechanical metallurgy. As a result of opportunities developed during the war, we are organizing a new educational program in the field of gas turbines and jet propulsion, and are giving much greater emphasis to electronics and to nuclear science and engineering, all of which are certainly destined to occupy an important place in the technology of the future. Notable was the establishment of our first adequately endowed chair, the Sloan Professorship of Industrial Management. Under the generous endowment provided by Alfred P. Sloan, Jr., '95, this professorship will be supplemented by lectureships held by distinguished visiting lecturers from industry.

### *Administrative Personnel*

In the administration of our educational program, we had one major change during the year. Dr. Edward L. Moreland, Dean of Engineering since 1938, asked to be relieved of this post as of July 1, 1946. Fortunately he agreed to continue to give part time to the Institute, and accepted appointment as Executive Vice-president to act as consultant to the President and Vice-president and to assume major responsibility in certain specified areas. To succeed him as Dean, we are happy in the appointment of Professor Thomas K. Sherwood, '24, of the Department of Chemical Engineering, who brings to the administration of the School of Engineering wide experience as an engineer and educator and intimate knowledge of the Institute . . .

I have spoken of the increase in our educational plant through additions made during the war. This added space has not only enabled us to take care of the great increase in the student body, but at the same time has both permitted and required a wholesale reallocation of space and renovation of equipment throughout the entire Institute plant. This general redistribution of space — the greatest since the Institute moved from Boston to Cambridge — together with the acquirement of the new buildings, is requiring an expenditure of \$1,750,000. While this has been a very severe drain on the Institute's limited unrestricted capital resources, the Executive Com- (Continued on page 110)



*The Class of 1896 marked its fifth decade since graduation from the Institute with a large reunion held at East Bay Lodge, Osterville, Mass. on June 7. From left to right (and back to front in some cases) standing: Joseph Harrington, Charles E. Stamp, Edward S. Mansfield, Conrad H. Young, Charles W. Tucker, Perry B. Howard, Frank A. Howard, Edgar H. Barker, Daniel M. Bates, Mrs. E. M. Bragg, John Ashton, Mrs. Herman Curtis, Walter M. Stearns, Mrs. Conrad H. Young, Paul W. Litchfield, Charles P. Moat, Lewis B. Breed, Mrs. Walter S. Dodd, Lawrence K. Sager, Albert E. Cluett, Mrs. Samuel T. Smetters, James G. Melliush, Charles E. Locke, Henry S. Baldwin, William P. Anderson, John A. Rockwell, Mrs. Henry D. Jackson, William T. Dorrance, Mrs. Lewis B. Breed, Myron E. Pierce, Mrs. Edward S. Mansfield, Elbridge C. Jacobs, William H. Clifford, Mrs. Charles W. Tucker, John Tilley, James M. Driscoll, Francis C. Hersey, J. Lloyd Wayne, 3d, Henry G. Grush, Henry R. Hedge, Myron L. Fuller, Samuel T. Smetters, Ralph C. Henry, and Frederick T. Rundlet. Sitting, left to right, are: E. M. Bragg, Frederick W. Damon, Elmer H. Robinson, Henry D. Jackson (deceased), Robert A. Davis, George S. Hewins, Samuel P. Hunt, Karl A. Pauly, Henry K. Sears, and William D. Coolidge.*

# Revere magnesium sheet and shapes save 1240 pounds deadload

for Purity Baking Co., Charleston, W. Va.



*Magnesium alloy body built by Purity Baking Co. from Revere sheet and standard shapes. Outside dimensions are 139¼" long, 80¼" wide, and 76" high. Weight of body, including interior tray racks to hold 2150 loaves of bread, is 1060 lbs. in magnesium compared to 2300 lbs. in steel.*

**E**LIMINATE deadweight! That is the way to save gas, oil, tires and maintenance if you are hauling light, bulky loads like bread . . . and the way to increase payload if you are hauling heavy goods. The Purity Baking Co. saves 1240 pounds of deadload per truck with bodies built of Revere magnesium alloy sheet and extruded magnesium shapes!

The result: a cut in gasoline consumption of from 3 to 4 gallons on each typical delivery run of 125 miles, reduced wear and tear on tires and chassis, and trucks that are easier to handle. The fleet of the Purity Baking Co. averages 3,000,000 miles a year. When it is entirely equipped with these light-weight bodies, it is easy to see that gas savings alone will amount to a minimum of \$1,000 a month.

Any operator could justifiably pay a premium price for such bodies. But Purity Baking Co., *without any previous experience in working with magnesium*, was able to build even the first unit at a cost which compares favorably with that of wood frame and steel panel bodies. And they report that the latest magnesium bodies they built actually cost less than the former wood and steel units! This is made possible by the standard magnesium structural shapes engineered and produced by Revere.

Readily available from Revere stock, these shapes plus

Revere magnesium alloy sheet, make it possible for any builder to produce bodies of magnesium with the same ease as steel. No sheet metal forming is required. None but familiar methods of fabrication and assembly are involved . . . clamping, drilling, riveting. Yet the body designer has full latitude, and the finished units may be planned to fit any make of chassis.

For full details on this important Revere development, get in touch with the nearest Revere office. A Revere Technical Advisor will gladly consult with you on this and other applications of magnesium to your business.

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## THE INSTITUTE GAZETTE

(Continued from page 108)

mittee has felt the expenditure warranted by the gain in educational efficiency thus made possible. For example, had we not modernized and enlarged our Chemistry laboratories, at a cost of \$400,000, we would not be able to handle 900 students in each of the first two undergraduate years, compared with the 600 accommodated prior to the war. New laboratories for Physics, Mechanical Engineering, Electrical Engineering, Aeronautical Engineering, and other departments similarly have enlarged our capacity and provided better instructional facilities.

### Charles Hayden Memorial Library

Every President's Report must review the past year and preview plans for the immediate future. It is fortunate when the report can include an announcement of a great step forward.

For years a library building fully adequate to the needs of the Institute has had top priority in our estimate of the desirability of new buildings. Plans have now been completed for a building facing the river front between the main educational buildings and Walker Memorial which will admirably fill this need and take the form of a memorial to a distinguished alumnus, the late Charles Hayden, '90.

Construction of this library building has been assured, I am happy to announce, by a gift of \$2,200,000 received from the Charles Hayden Foundation through the generosity of Mr. Hayden's brother, J. Willard Hayden, and the cotrustees of the Foundation. This princely gift, the largest single gift received by the Institute since the Eastman benefactions, will cover a very large portion of the total cost of the building.

In planning this new library building we have conceived of it as serving a dual but consistent purpose. As the nucleus of our departmental library system and itself a great repository, it will provide the most serviceable collection possible of advanced research and teaching material in the scientific, engineering, and architectural disciplines to which the Institute is primarily devoted. In addition, however, it must serve the humanities program and the nonprofessional development of our students by offering them the maximum invitation to the many important fields of thought and inspiration outside our required curriculum. This concept recognizes that the humanistic re-

sponsibility of the Institute's Library is in some ways even more far reaching than that of the libraries of the great liberal arts institutions.

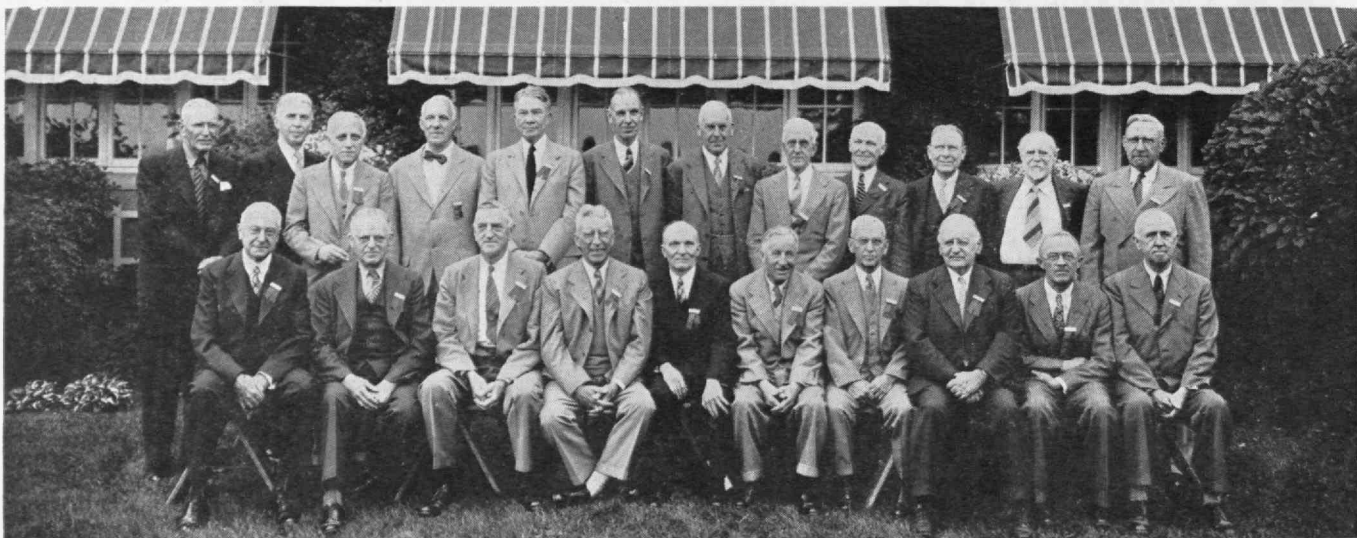
The Charles Hayden Memorial Library, then, will be a great deal more than a conventional library. It will house, for example, our departments in the social sciences and the humanities so that they will be contiguous to their libraries, which are in effect their laboratories. In addition to this formal implementation of the Institute's humanistic program, the new library will seek to facilitate the student's examination of various cultural heritages which cannot find a place in the formal curriculum. The already large collection of recorded music possessed by the Institute will be housed in carefully designed quarters in the new building as part of an audio-visual center which will make available all sorts of recorded sound as well as visual tools such as motion picture film. This center will be as modern as we know how to make it, will provide a variety of sizes of listening and viewing facilities, and, on the formal side, will increase the facilities for instruction in modern languages.

### Other Building Projects

While the Charles Hayden Memorial Library is the principal addition to our educational plant which has been planned and financed, there are other projects of great importance. The new Gas Turbine Laboratory, made possible through grants from five industrial companies, is now under construction concurrently with the modernization and enlargement of the Sloan Automotive and Aircraft Engine Laboratory made possible through a generous additional gift from Alfred P. Sloan, Jr. Other new additions which are urgently needed and for which we are now seeking ways and means include a hydrodynamics laboratory and towing tank for our Department of Civil and Sanitary Engineering and our Department of Naval Architecture and Marine Engineering; an addition to our Metal Processing Laboratory to house a modernized and enlarged machine tool laboratory for our Department of Mechanical Engineering; a laboratory for the growing program in nuclear science and engineering; and a new building to house the Departments of Biology and Food Technology. . . .

### Graduate School and Research

Although the scholastic and environmental needs of the undergraduate body took up the largest portion of President Compton's annual report, (Continued on page 112)



The Class of 1901, celebrating their 45th year as M.I.T. graduates, gathered at the New Ocean House, Swampscott, Mass. on June 7 and 8 for the reunion at which this photograph was taken. From left to right, front row, are: William E. Farnham, Asher L. Weil, Edward Seaver, Philip W. Moore, Robert L. Williams, Guy C. Peterson, Harry R. White, Willard W. Dow, Theodore H. Taft, and John Boyle, Jr. Rear row, in reading order, are: V. Frank Holmes, Mansfield Estabrook, Harry V. Allen, Robert M. Derby, Roger W. Wight, Ralph C. Robinson, George W. Allen, Edmond F. Brigham, Henry W. Chambers, J. Russell Putnam, Edward H. Davis, and Joseph D. Evans.

# Rogers Peet Company

MAKERS OF FINE CLOTHES for Young Men and Men Who Never Grow Old



*A gray, pink aftermath of dawn and the sportsman finds every nerve in his body leaping! The duck are heading for the decoys! To match the speed of their flight, split-second decisions must approach perfection . . . At Rogers*

*Peet the same basic idea—the approach to perfection—is always uppermost in the mind of our Master Designer—perfection in fabric, style, tailoring and fit—perfection in clothes for young men, and men who never grow old.*

FIFTH AVENUE at 41st STREET, NEW YORK 17, N. Y.  
THIRTEENTH ST. at BROADWAY, NEW YORK 3, N. Y.  
WARREN STREET at BROADWAY, NEW YORK 7, N. Y.  
TREMONT ST. at BROMFIELD ST., BOSTON 8, MASS.

*The right thing in everything men and boys wear*



## THE INSTITUTE GAZETTE

(Continued from page 110)

the Administration was also keenly aware of its responsibilities to graduate students, and to the needs of continuing the highest type of research work for government, industrial, and academic purposes. Said Dr. Compton:

The major attention given in this report to undergraduate instruction and student problems does not imply any lack of attention this past year to the Institute's Graduate School. With 1,300 students studying for advanced degrees and with vigorous research under way in all professional departments, the Graduate School is flourishing as never before. Its standards have never been higher or the quality and variety of research greater.

In relation to the Graduate School, let me direct attention briefly to three major trends which are beginning to play a very large role in our advanced program.

The first of these is the development of interdepartmental Centers of Research which co-ordinate the co-operative activities of various departments in certain very important fields of overlapping interest. While we call them "Centers of Research" because research is their predominant role, they are nevertheless destined to play a very important role in our educational program, especially at the senior and graduate student thesis levels. Their influence will also filter back into the co-operating departments to enliven and modernize their programs in the direction of the very latest technological developments.

These Centers of Research appear to be a highly satisfactory answer to a problem which has long confronted us and other institutions, namely, that of handling those interests which

reach outside the traditional departmental boundary lines and require the co-operation of the specialists and points of view of various departments. Certain institutions have tried to meet this problem by setting up special institutes; others have set up new departments. Both of these solutions seem to us to be lacking in two desiderata, namely, the mobilizing of the interested personnel in various departments into a co-operative effort, while still recognizing each department's special interest in various aspects of the program, and the full co-ordination of the research with the educational program . . .

A second major new development in our programs of education and research is the greatly increased degree of interest and co-operation on the part of industry and the War and Navy departments. The work sponsored here by these outside agencies during the coming year involves a sum greater than the largest pre-war operating budget of the entire institution. From industry have come an increasing number of fellowships and substantial support of new teaching and research programs, several of which I have described earlier in this report.

The third feature of our educational program which I shall mention has to do with the greatly increased number of postgraduate students coming from the Army and Navy for training in certain specialties. For many years we have co-operated with the Navy to provide the postgraduate education of the naval constructors and, more recently, the combined program for naval constructors and naval engineers under the Bureau of Ships through an arrangement with the Postgraduate School at Annapolis. In addition to this, before the war we had a few special military students coming to study such subjects as torpedo design or fire control. Now, however, and again as a result of the recent war experience, both services are sending greatly increased numbers of selected young officers for postgraduate study in educational institutions. The demands on us for such educational assistance to Army and Navy have been

(Concluded on page 114)

# LEWIS-SHEPARD

FOR OVER 30 YEARS DESIGNING, ENGINEERING and MANUFACTURING  
**MATERIALS HANDLING EQUIPMENT**



The L-S list of products is extensive,—a complete line on wheels. Engineering experience and personnel of the highest calibre,—manufacturing facilities both ample and modern in every respect,—service of a kind which has made Lewis-Shepard a buy-word at many plants throughout the highly industrialized U.S.A.,—and across the water, too!

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**SINGLELIFTS**

**HYDRAULIC HANDLIFT TRUCKS**

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**A LOT OF TELEPHONE SERVICE  
FOR A LOT OF PEOPLE**

**WE'VE** added about 3,000,000 new telephones so far this year — more than twice as many as ever before.

That's one reason why local telephone calls are up 25,000,000 *a day* over last year. Long Distance calls have more than doubled since before the war.

We're doing some fast stepping to meet your needs, in spite of shortages of materials.

Best of all, service has remained good on most calls, despite the large increase in the use of the telephone. There are some delays, but we'll be taking care of all of them just as soon as additional equipment can be made and installed.

**BELL TELEPHONE SYSTEM**







Reg. U. S. Pat. Off.

## Samson Cordage Works

Boston 10, Mass.

Manufacturers of braided cords of all kinds, including sash cord, clothes line, trolley cord, signal cord, shade cord, Venetian blind cord, awning line, etc., also polished cotton twines and specialties.

### SPOT CORD

Reg. U. S. Pat. Off.



Our extra quality sash cord, distinguished at a glance by our trade-mark, the colored spots. Especially well known as the most durable material for hanging windows, for which use it has been specified by architects for more than half a century.

## THE INSTITUTE GAZETTE

(Concluded from page 112)

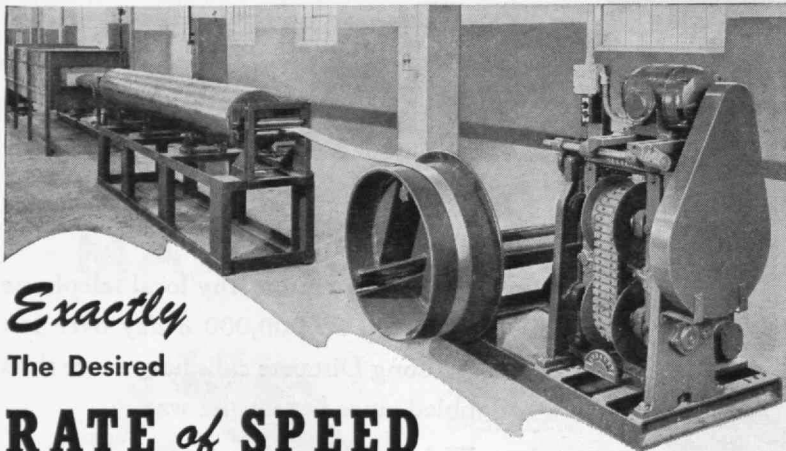
heavy and well reasoned, and we have had to limit the number admitted only because of the importance of retaining an appropriate share of opportunity for civilian graduate students to be trained for professional careers in industry or education.

### The Financial Outlook

In August, I announced the Corporation's decision to increase the Institute's tuition from \$600 per academic year to \$700, the increase to take effect with the opening of the summer term in 1947. This decision to raise tuition, as you well know, was made reluctantly and only after rising costs made it unmistakably necessary. At the time the tuition was announced, we estimated that our unit expenses had risen 28 per cent since 1939-1940. They are still rising, and we must expect this year, before the higher tuition takes effect, to run a large deficit, amounting to several hundred thousand dollars.

Aside from the difficulties arising from this present period of inflation, the Institute has long-term financial problems which must be squarely faced. Our primary need is for capital funds, both to provide necessary and forward-looking new facilities, and to increase our endowment. This past year endowment income was only 24 per cent of our total income; in 1939-1940 it was 37 per cent. A large increase in the Institute's capital resources must be a major objective of the Administration and Corporation during the period just ahead. . . .

Internally the institution is sound and vigorous; externally its reputation is high. We should therefore face the future with confidence and a virile ambition for still further improvement and achievement.



*Exactly*

The Desired

## RATE of SPEED

*of Metal Strip* ACCOMPLISHED BY

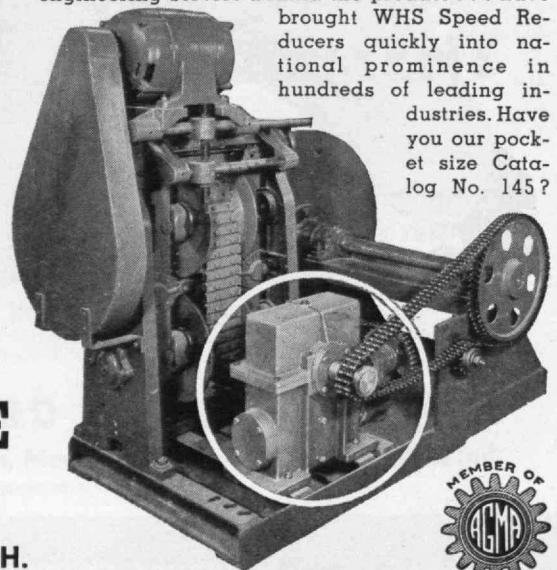
## WHS SPEED REDUCER DRIVE

on this Bright Annealing Furnace

in the Plant of W. M. CHACE COMPANY, DETROIT, MICH.

A regular stock Model No. 8BX Worm and Helical Gear Speed Reducer (ratio 60:1) controls the pulling of bi-metallic strip through this bright annealing furnace (through Hoskins electric furnace and controlled hydrogen atmosphere, water cooled) . . . then actuates the coiling of the strip. The **integrity** of the product . . . and the skilled engineering service behind the product . . . have

brought WHS Speed Reducers quickly into national prominence in hundreds of leading industries. Have you our pocket size Catalog No. 145?

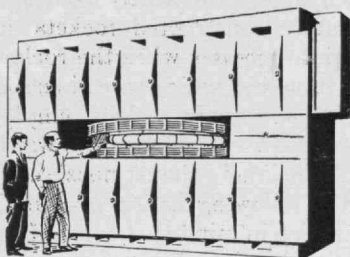


## WINFIELD H. SMITH CORPORATION

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# NEW IDEAS from General Electric

## MATTER FROM ENERGY



Creation of matter from energy—reverse of the process in the atomic bomb—is only one of the surprising things that can be accomplished with the aid of the 100,000,000-volt G-E Betatron. It can also:

- free particles of matter traveling at 99.99 per cent the speed of light,
- Produce the most powerful x-rays known to science,
- generate radiations heretofore available only in cosmic rays.

The Betatron is one of the big guns used by G.E. in finding nuclear facts that may be important in the production of atomic power.

## GERM-KILLING LAMP

Lamps that disinfect the air through which their rays pass have been developed in the laboratories of the G-E Lamp Department.

Hospitals, military barracks, factories and schools use them to clean the air of bacteria.

Of particular importance to bakers, meat handlers and other food processors is the fact that G-E Germicidal Lamps also kill molds.

## BOUNCER

In the G-E Research Laboratory, scientists turn up interesting new substances first and look for uses later.

Not so long ago they discovered "bouncing putty," a lively silicone by-product. But no one could find a use for it.

A sailor did. Hospitalized with an injured hand, he wanted something to knead in order to keep his fingers limber as they healed. Bouncing putty did the trick.



## ELECTRONS AT WORK

New electronic devices worked out in G-E laboratories include:

- a canteen machine which grills hot dogs, hamburgers and cheese sandwiches in the heat of electronic oscillator tubes,
- a filter which cleans air by electrically charging motes of dust and smoke, then drawing them to magnetized plates,
- an electronic newspaper, to be delivered on radio waves soon in a dozen cities,
- a super-size 16-by-22-inch screen for G-E television receivers.

## X-RAY BUSES



Four G-E built x-ray buses have been purchased by the State of Illinois to help in the fight against tuberculosis. These "x-ray rooms on wheels" will be used to conduct a state-wide case-finding T.B. survey.

X-ray buses make it possible to provide such service without prohibitive cost because of special x-ray equipment. This equipment permits the use of miniature film and cuts chest survey cost by 88 per cent in comparison with the cost of standard, large-size x-ray films.

The State Health Departments in many other states are also equipped with these units and conduct x-ray surveys in co-operation with local medical groups, and T.B. associations.

## TWO-WAY BLANKET

General Electric engineers have perfected an electric blanket with which different temperatures can be maintained on both sides of a bed. Complete with two sets of wiring and dual-temperatures control, it is possible for two people in the same bed to adjust the bed warmth to their individual needs.

**GENERAL  ELECTRIC**





## at **ARNOLD** THERE IS NO CEILING ON QUALITY

*We are not satisfied* merely to offer you magnets which come up to the proposed R.M.A. standards . . . this is our minimum requirement. A quality floor below which we refuse to go.

*Nor are we satisfied* that ordinary production and inspection methods offer you adequate quality protection . . . we *individually test* each Arnold magnet in a loud speaker structure before shipment.

*Another "individual touch"* which has contributed to winning industry-wide customer acceptance for Arnold magnets is our established minimum standard of 4,500,000 BHmax for Alnico V material.

*Over five million* Arnold loud speaker magnets of the R.M.A. type have been produced since V-J Day under these quality safeguards. Continued adherence to them assures you of long-lived, dependable product performance.

*In the mass-production of magnets, the Arnold "individual touch" does make a difference. Let us give you the whole story.*

## THE ARNOLD ENGINEERING COMPANY

SUBSIDIARY OF ALLEGHENY LUDLUM STEEL CORPORATION

147 EAST ONTARIO STREET, CHICAGO 11, ILLINOIS

Specialists in the manufacture of ALNICO PERMANENT MAGNETS

## ROCKETS IN BATTLE

(Continued from page 100)

rockets one such cruciform grain of proper size and length constituted the propelling charge, burning along its entire length inside a steel tube which carried the warhead in front and a set of exhaust nozzles in the rear. The fins, of which there were two types, were also attached to the rear end. Rockets of simpler mechanical construction used fins which were permanently fixed in one position. More elaborately constructed rockets used fins which folded back into recesses when the rocket was inside the launching tube and which spread as soon as the rocket was under way. Spinner rockets, employing the Hale principle, were also used, but the spin was imparted by means of slightly inclined exhaust nozzles.

When reading the following listing of American war rockets, one should keep in mind that some of them were hurry-up developments and makeshift arrangements. It should also be remembered that the whole array merely represents the beginning of a new evolution, and it should not be assumed that all these applications are more or less final. It is quite possible that both the portable rocket weapons and the airborne rockets may be replaced again by the new recoilless guns. Many of these ordnance rockets will not last, but they did their jobs well while they did last.

The tabulation is enlightening, to be sure, as a means of comparing the performance of different kinds of recently devised rockets, but when viewed as a means for providing historical perspective the list is even more revealing as an indication of the tremendous strides which have been made in processes of industrial manufacture. Even the experimental models of today's rockets are made by methods vastly more precise and speedy than were used for the production run of earlier rockets recorded in this article.

### LIST OF UNITED STATES ORDNANCE ROCKETS WORLD WAR II

#### Portable Rocket Weapons

*Bazooka.* Antitank rocket for direct fire, with portable launcher to be operated by a two-man team. Effective range, 200 yards. Warhead with penetrating shaped charge. Diameter of propelling rocket, 2.36 inches. The same rocket existed with a warhead filled with white phosphorus for smoke and incendiary action.

*Super Bazooka.* Improved version of the former. Dimensions same as original bazooka but fitted with a heavier propelling charge extending effective range to 700 yards.

*Bazooka, 3.5-inch.* Details of this rocket are still secret.

#### Airborne Rockets

*Retro-rocket.* Antisubmarine weapon fired backwards with velocities matching plane speeds so that the rocket fell vertically over the area where a submarine was known to be. There were three different rocket bodies to match the flying speeds of three airplane types used for submarine patrol. The head of this rocket was a modified version of the "mousetrap" rocket and carried 35 pounds of high explosives. Retro-rockets accounted for the last "probably sunk" German submarine of the war, on April 30, 1945.

*Retro Float Light.* Same as above, but fitted with flare.

*3.5-inch Antisubmarine Rocket.* Over-all length, 54½ inches; total weight, 54 pounds. Propelling charge consisted of one

(Continued on page 118)

THE MODERN MIRACLE...

OF HEATING WITHOUT HEAT

## RADIO FREQUENCY HEATING

gives you heat where you want it ... as you want it

For many years, man has used *external heat* to harden, braze, solder, or anneal metals—to condition or otherwise treat such substances as rubber, textile fibers and the gluing of wood.

Now, through Electronic Radio Frequency Heating, science has achieved the modern miracle of *heating without heat!*

The outstanding feature of *Induction Heating* of metallic substances...and *Dielectric Heating* of non-metallic substances...is the generation of heat *within the material itself* and at temperatures higher than ever

before obtainable. Frequencies used range from 200 kilocycles to 50 megacycles.

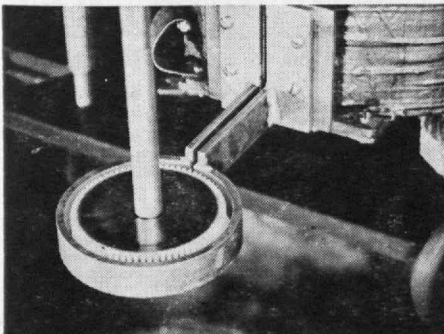
Induction and dielectric heating have accomplished wonders in reducing production time and cost...controlling the rate and range of heating...improving quality and appearance of the product.

*If you are interested in using this new production tool in your business, send for booklet B-3620—or arrange for a showing of our new sound motion picture in full color: "Radio Frequency Heating."*

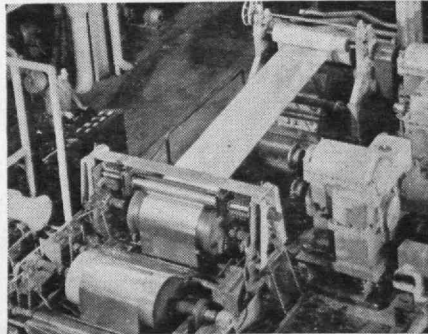
# Westinghouse

PLANTS IN 25 CITIES OFFICES EVERYWHERE

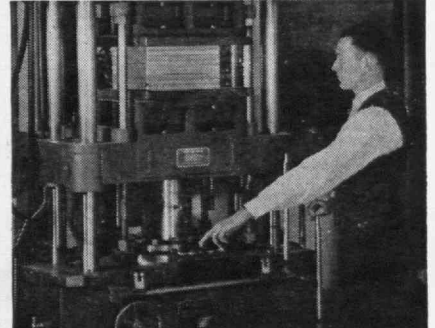
TUNE IN TED MALONE — MONDAY, WEDNESDAY, FRIDAY, 11:45 A.M. EST, AMERICAN NETWORK



**INDUCTION HEATING** is ideal for hardening of gears (see above), contour hardening, brazing, soft soldering and annealing.



**DURING THE WAR** Westinghouse research engineers pioneered induction heating equipment for *reflowing tin* on electrolytic tin plate. Result *one* pound of tin now does the work of *three*.



**DIELECTRIC HEATING** has many advantages over conventional heating in bonding plywood (see above), molding plastic preforms, textile processing—and curing plastic laminates, rubber, etc.



## ROCKETS IN BATTLE

(Continued from page 116)

8.5-pound grain. The head was solid steel, weighing 20 pounds.

**3.5-inch Antisubmarine Rocket.** Same rocket but fitted with 5-inch high-explosive warhead weighing 50 pounds.

**4.5-inch Aircraft Rocket M-8.** Total weight, 38 pounds, fitted with warhead containing five pounds of high explosives. At first with fixed fins, replaced later by folding fins. This rocket was fired from the well-publicized, three-tube clusters carried under the wings of various types of aircraft.

**115-mm. Aircraft Rocket.** Also known as the "super 4.5-inch." Over-all length, 6 feet; total weight, 103 pounds; weight of warhead, 40 pounds. Had four fixed fins. Longer range and more accuracy than the M-8 rocket. Two types of heads: one a semi-armor-piercing head; the other, a fragmentation casing holding 8.5 pounds of high explosives.

**5-inch HVAR** (high-velocity aircraft rocket) nicknamed "Holy Moses." Over-all length, 6 feet; total weight, 140 pounds. Propelled by a 24-pound grain. The rear end consisted of a disk with eight peripheral propulsion nozzles and a somewhat larger central nozzle closed by a metal plug which would hold at ordinary operational inside pressures but would be blown out if the pressure approached the safety limit. This type of rocket, introduced in combat in July, 1944, became the most used air-to-ground rocket of the United States armed forces.

**"Tiny Tim."** Over-all length, 10 feet, 3 inches; diameter, 11 $\frac{3}{4}$  inches; total weight, 1,284 pounds. Warhead weighed 590 pounds and held 150 pounds of T.N.T. Propelling charge consisted of four grains with a total weight of 146 pounds. The rocket was launched by dropping it from the plane which carried it, with a lanyard attached to both plane and rocket. Rocket was ignited when lanyard was fully extended. First test in August, 1944; only combat use, Okinawa. "Unfortu-

nately," as the official report phrases it, "the results could not be accurately ascertained. There were, it seems, so many things being thrown at the Japanese on Okinawa that it was impossible to distinguish the wreckage caused by 'Tiny Tim' from the general destruction."

### Ground-to-Ground and Barrage Rockets

**4.5-inch M-8.** Same as listed above. Had range of 4,000 yards when used as a ground-to-ground weapon. The Navy used it with fixed fins as a barrage rocket and the Army with folding fins. Multiple launchers developed for this rocket were "Xylophone" (8 tubes, truck-mounted) and "Calliope" (60 tubes, mounted on turrets of General Sherman tanks).

**4.5-inch Smoke Rocket.** Same rocket, adapted for the laying of smoke screens. When carrying smoke composition head its range was 1,100 yards. Agent used was at first "FS Liquid Smoke" (a mixture of sulphurtrioxide and chlorosulphonic acid); later, white phosphorus. The 3.5-inch aircraft rocket also existed in a version adapted to smoke-screen laying.

**7.2-inch Demolition Rocket.** Warhead carried 32 pounds of high explosives. In appearance the rocket looked like a club. The Army launcher devised for it was nicknamed "Whiz Bang," and the 120-round Navy launcher for the same rocket (used from special rocket boats) was called "Woofus."

**7.2-inch Chemical Rocket.** Range up to 3,000 yards, was used for smoke composition and could have been used for poison gas. Each rocket carried 20 pounds of chemicals. The chemical 7.2-inch rocket had a special 24-round launcher nicknamed "Grand Slam."

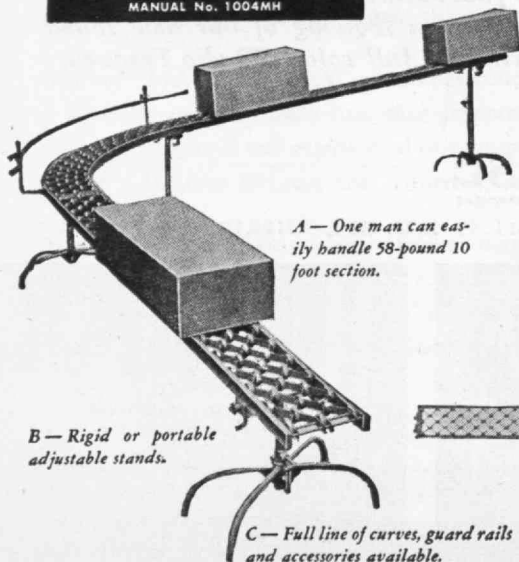
**4.5-inch Spinner Rocket M-16.** Spin-stabilized rocket of same over-all weight as M-8, but with a range of 5,250 yards and a slightly heavier warhead. Launchers for this weapon were "Honeycomb" (24 tubes) and "Hornet's Nest" (60 tubes). A  
(Concluded on page 120)



## MARKET FORGE COMPANY STANDARDIZED MATERIALS HANDLING EQUIPMENT

### LOAD-VEYORS

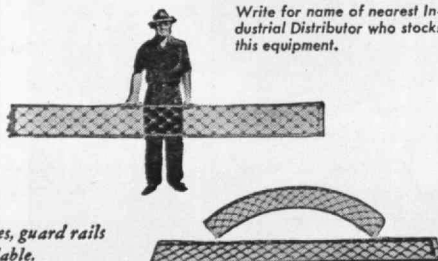
SEND FOR LOAD-VEYOR  
MANUAL No. 1004MH



### A MAGIC CARPET FOR INDUSTRY

Load-Veyors combine great strength and light weight. Exclusive Market Forge features . . . grid construction supports ball bearing rollers on both sides . . . hardened inner and outer ball bearing races minimize wear . . . Load-Veyors may be used on either side . . . rails on reverse side provide for safe conveyance of small packages.

Write for name of nearest Industrial Distributor who stocks this equipment.



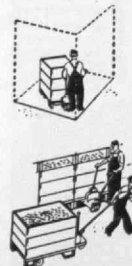
### LOAD-LIFTS

SEND FOR LOAD-LIFT  
MANUAL No. 1005MH



### SIMPLIFY YOUR HANDLING PROBLEMS

The use of the Load-Lift system will greatly increase your plant efficiency for the smallest capital investment of any adequate materials handling system. Saves double handling — utilizes space advantageously — reduces fatigue — eliminates damage from elements.



George C. Glover '99 Nathaniel Warshaw '16 Leo M. Beckwith '35

MARKET FORGE COMPANY MATERIALS HANDLING DIVISION 99 GARVEY ST., EVERETT 49, MASS.

# ATTENTION TO DETAIL

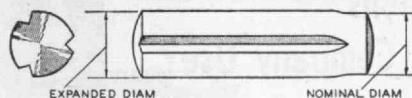
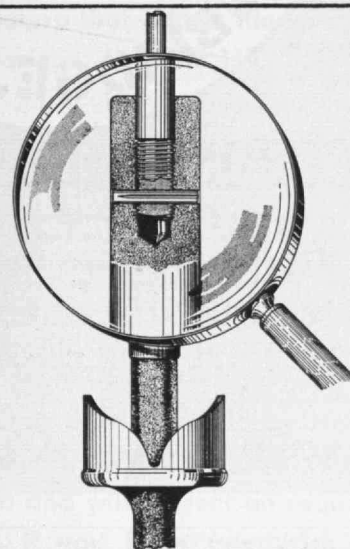
**Pays Off in  
Control Valve  
Performance**

Note: One skirt of the valve plug is 90° out of position in relation to the other.

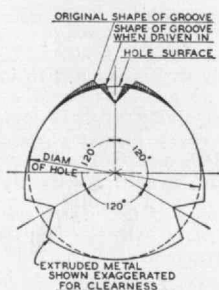
## Mason-Neilan method of pinning plug & plug stem assures strongest possible assembly

The tee head construction used on some earlier control valves required clearance between the stem and plug to allow for bonnet and seat misalignment, permitting lost motion (vertical and rotary) which cannot be tolerated since the plug must respond to the slightest pressure change on the diaphragm.

The present Mason-Neilan threaded and pinned stem and plug construction does away with all toggles and free alignment joints, yet any tendency towards binding has been eliminated by pilot machining on the bonnet and blindhead and by holding all machine operations to close tolerances. The plug guide is drilled and tapped with a pilot section above the threads for accurate centering of the stem. The threaded joint provides the mechanical strength for holding the two parts together. The stem is locked into the plug by a special grooved pin which fits tightly at both ends in the guide as well as in the center through the stem.



Pins have three grooves extending from end to end, except for a short distance on one end which is the nominal diameter of the pin and serves as a pilot for driving.



In forming the grooves, a portion of the metal is displaced locally at the sides leaving a bulge of extruded metal along the edges of grooves and resulting in an expanded diameter. The action consists of forcing the elastic bulges partly back into the grooves when the pin is hammered or pressed into the drilled hole, thus forming an extremely tight fit against the hole wall.

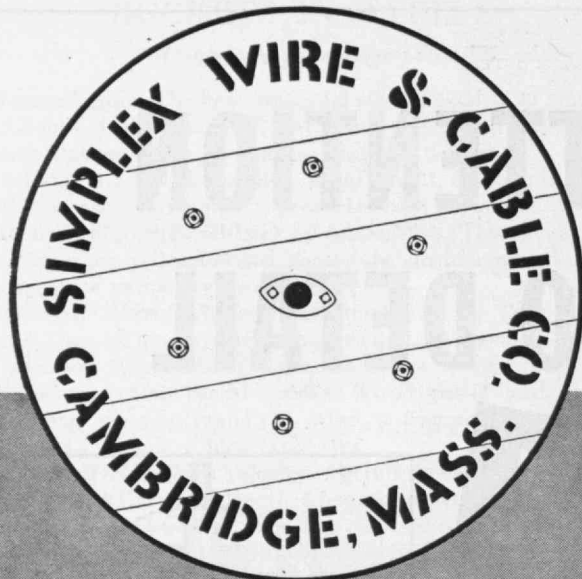
**MASONEILAN**

## MASON-NEILAN REGULATOR COMPANY

1190 Adams Street, Boston 24, Massachusetts

New York Philadelphia Pittsburgh Cleveland Chicago Tulsa  
Atlanta St. Louis Houston Los Angeles San Francisco  
Mason Regulator Co. of Canada, Ltd., Montreal, Canada





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SIMPLEX WIRE & CABLE CO.  
79 Sidney St., Cambridge 39, Mass.

## What CO<sub>2</sub> Applications Can My Company Use?



**CHART GIVES THE  
FACTS . . . WRITE  
FOR COPY TODAY!**

You will find this chart valuable as a check list of possible applications to your processes or problems. It's an up-to-date summary of the industrial uses of DRY ICE and CO<sub>2</sub>. All applications described are in everyday use . . . Many may surprise you by their novelty and ingenuity. Practically every industry has need for DRY ICE and CO<sub>2</sub>. New uses are being discovered constantly.

*Ask for a copy of this chart without obligation. Every potential user should have it. Write today.*

**RED DIAMOND**  
*Liquid Gas and Dry Ice*

The Liquid Carbonic Corporation,  
3110 South Kedzie Avenue, Chicago 23, Illinois  
Gentlemen: Please send me a free copy of your new "Chart of Industrial Uses for Dry Ice and CO<sub>2</sub>."

Name.....  
Street Address.....  
Town..... State.....

## ROCKETS IN BATTLE

(Concluded from page 118)

proximity fuse for the 4.5-inch spinner had been developed but was not actually used.

*3.5-inch Spinner Rocket.* Experimental only, not issued.

*5-inch Spinner Rocket.* Over-all length, about 30 inches; total weight, 50 pounds; range, between 700 and 1,000 yards, designed for penetrating flat-angle fire. Like the 115-millimeter aircraft rocket, the 5-inch spinner came with two types of warheads, one semi-armor-piercing, and one a general purpose head.

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*Snake.* A long chain of metal plates, each 5 feet long and 5 inches wide. Total length, 100 feet; the front plate had an up-sweep like a ski and mounting brackets for a 4.5-inch rocket. T.N.T. bricks were clamped to the plates; the whole was used to detonate a path through enemy mine fields.

## POST-INDUSTRIALISM

(Continued from page 103)

without the necessary organs of collective association and responsible social control." <sup>5</sup> If this is not the heart of the protest against modern industrialism, it is certainly very close to it.

Aristotle believed that men came together in cities in order to live and that they remained in order to live the good life. The skepticism which is dampening the optimism of modern industrial peoples has to do with the problem of whether they can manage to exist under the conditions of industrialism as they have known it, much less to achieve the good life.

Whatever the good life may prove to be in modern technological culture, at least it must pivot around life itself. A civilization must achieve an organic ideology. So long as the machine remains the archetype of our existence, this prospect must remain dim, for at the expense of the development of human values, industrialism necessitates mechanical multiplication, power, expansion. As

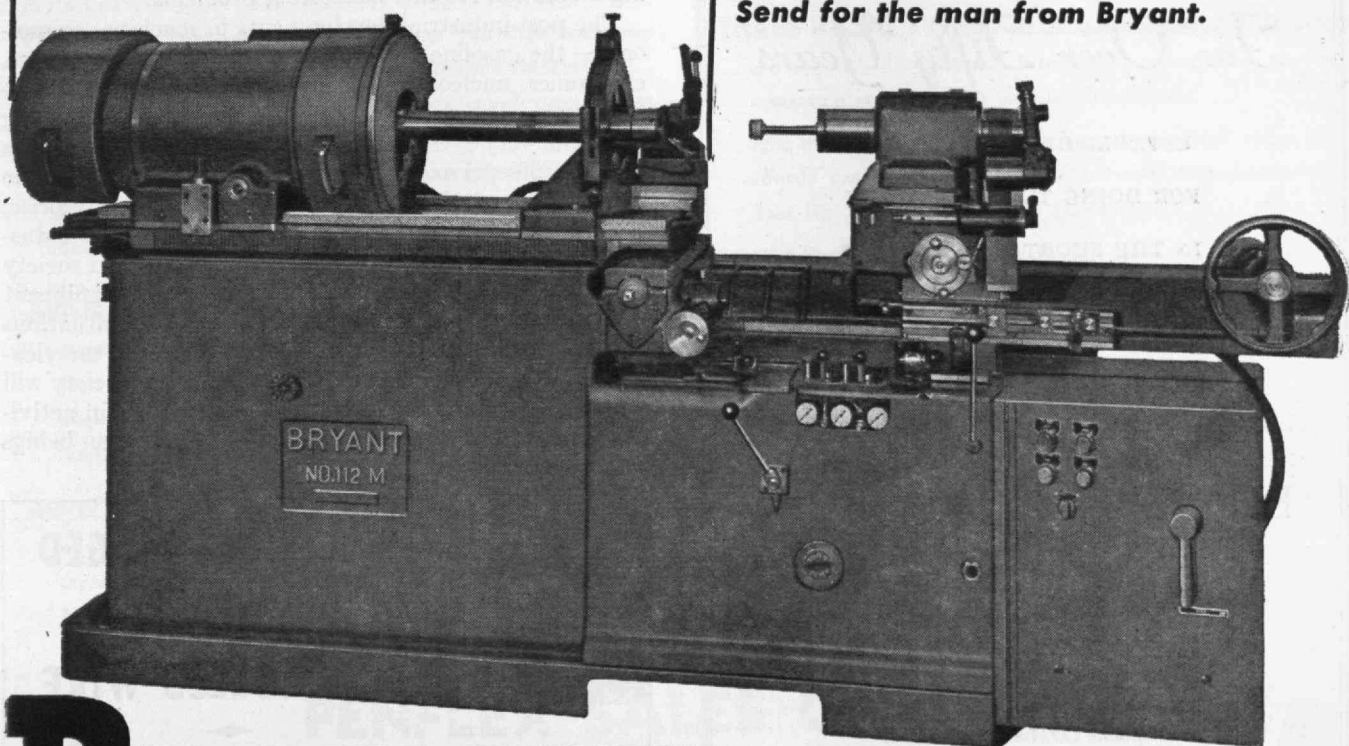
(Concluded on page 122)

<sup>5</sup> Ref. Mumford, *op. cit.* page 239.

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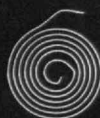
## POST-INDUSTRIALISM

(Concluded from page 120)

the machine, with its economic and social congestion diminishes its mastery over human lives, a new frame of thought and action can emerge. A life-conditioned frame becomes possible with accent on individual human growth, norms, and inter-relationships. The new bio-technical community of man and nature, which post-industrialism brings to flower, swings the focus of collective attention from high concentration to a pattern of life which engages the depths of human experience. Industrialism has surely proved that concentration of physical power does not mean the same thing as the integration of human powers.

Basically, the problem of industrialism today is one of expectations. The technological conquest of the environment by industrialism is close to completion; some industrial countries have just about put the finishing touch to their industrial plant. Technologically, man can get whatever he wants. Practically, he does not. The problem becomes a simple one of showing the modern industrial man that he cannot get what he wants (which is contrary to the industrial pattern of motivations), that he should not fulfill his legitimate needs (which is cultural retrogression), or that he must be content with less than, or something quite different from, his justifiable desires (which is both industrially and culturally backward). The trouble with industrial people has been that they have not taken the time to find out just what kinds of experiences are possible and desirable, or how much opportunity there exists for the full development of human culture in a machine technology. A better, more wholesome, more highly developed cultural life might be expected to be their lot if industrial people would devote more attention to finding a solution for this interesting problems.

The post-industrial developments in machine technology — the gasoline motor, electric transmission, plastics, electronics, nucleonics — are hastening just such a consideration. The fact is, industrialism is decentralizing under our very eyes. A decentralizing industrialism makes possible the personalization of human relations in the resurrection of the small town, the small enterprise, the truly co-operative undertaking. Decentralized industrialism promises to make possible a personalized society in which whole human beings participate as significant persons, not as specialized functionaries, in the situations of collective living. Should this trend continue, the vicarious satisfactions of an anonymous industrial society will slowly give way to the direct, personal sharing in activities which, since long before industrialism, human beings have cherished.



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## RADIOACTIVE BLOOD CELLS

(Continued from page 94)

sodium-citrate-dextrose solutions, namely, DeGowin's and Alsever's, were found to give adequate preservation for periods of from 12 to 15 days. The ratio of diluent to blood drawn was very high in these solutions, and yet this dilution did not seem particularly to aid preservation. Another high dilution solution with phosphate buffer, McGill solution, was found to be good for only 12 days. The addition of hydrochloric acid to the sodium-citrate-dextrose solution also gave preservation for 20 days. The best preservation was obtained with acid citrate dextrose commonly referred to as ACD. Two solutions were studied, both at a pH of 5.0, in one of which 120 cc. and in the other 75 cc. were used for the taking of 500 cc. of whole blood. These solutions gave satisfactory preservation for from 21 to 26 days.

No truly satisfactory solution to be added to packed red cells immediately after the removal of plasma ever was found. Ten per cent corn syrup permitted transfusion up to 10 days after drawing. Various phosphate buffered, citrate buffered, and bicarbonate buffered solutions permitted preservation for 10 to 16 days, but none of these solutions preserved resuspended red cells long enough to permit of their being shipped overseas with any guarantee that they could meet the 21-day period.

It was found, however, that if whole blood was taken in the acid-citrate-dextrose solution, promptly centrifuged and the plasma withdrawn, the cells could be stored in the packed state at optimal refrigeration temperatures, resuspended in a slightly hypertonic saline solution (1% NaCl or 0.85% NaCl plus 0.5% dextrose) just prior to transfusion, and could be transfused up to 21 and, in some instances, 25 days of storage, as if the cells had been stored as whole blood.

The acid-citrate-dextrose solution, therefore, was recommended by this group to the Committee on Medical Research of the Office of Scientific Research and Development, and by that office, to the Surgeon General's Office, for use in its overseas whole-blood program.

The determination of post-transfusion survival of the cells was one aspect of the study, but it was also of interest to learn something about the fate of those cells which were not retained within the recipient's blood stream. The method permitted of measuring both the quantity of these deteriorated cells and their rate of disappearance. It was observed that with well preserved blood, the rate of disappearance was extremely slow and usually complete within 24 hours. In the poorly preserved blood, the rate of disappearance was much more rapid, the bulk of the non-viable cells being destroyed within the first four to six hours after transfusion. This implied that a rather severe burden had been placed upon the reticulo-endothelial system of those patients who had received poorly preserved blood. The ability of the body to clear itself of plasma hemoglobin has been studied, and it was shown by calculation, on the basis of the radioactivity data, that until the preservation of a given transfusion fell below the 70 per cent level, the recipient's plasma hemoglobin level probably would not rise to dangerous levels. If only 70 per cent of the cells survived, the plasma hemoglobin level might temporarily exceed the renal threshold for hemoglobin, but the

(Continued on page 126)



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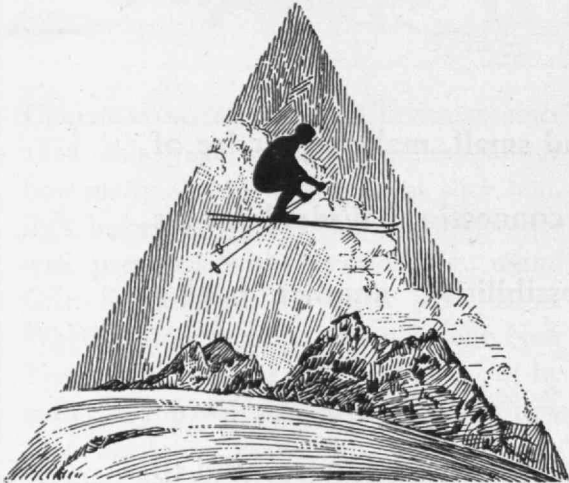


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## RADIOACTIVE BLOOD CELLS

(Continued from page 124)

mechanism was still efficient enough to clear the plasma of the hemoglobin within a relatively short period. If less than 70 per cent of the cells survived, plasma levels would undoubtedly be reached at which hemoglobin could not be promptly cleared from the blood stream. It was for this reason that the recommendation of a minimal acceptable preservation of at least 70 per cent of the transfused cells was made.

### Technique of Refrigeration

Experiments also were conducted to determine the optimal range of refrigeration for blood in acid-citrate-dextrose, both during depot storage and aerial and land transportation. These experiments were conducted in collaboration with medical officers of the United States Navy and United States Army. In one experiment 10 bloods were taken in acid-citrate-dextrose and placed in a specially prepared, light-weight refrigerator to which was attached a recording thermometer. The thermal element of the instrument was in close proximity to the blood bottles. A dioxane indicator in the form of an L-shaped tube in which a small amount of dioxane, melting at 10°C., had been sealed, was secured to the neck of each bottle. Prior to fastening the indicator to the bottle the dioxane was frozen in the upper arm of the tube. The refrigerator held about 80 pounds of water ice, and was tightly sealed. This was flown from Boston to Oakland, California, and back, during the course of five days, during which time it was in flight about 70 hours. The refrigerator was reiced at Oakland. On return to Boston, none of the dioxane indicators had melted. The recording obtained from the thermometer also indicated that, in all probability, the temperature inside the refrigerator had not exceeded 10°C. at any time during its travel. These 10 bloods were transfused into individual recipients from 9 to 26 days after they had been drawn. In all cases, survival was satisfactory; the lowest survival of any of the bloods being 76 per cent. This experiment was regarded as sufficient evidence of the safety of refrigerated aerial transportation by Navy medical authorities in planning their Pacific overseas whole-blood program.

In another experiment, five bloods in Alsever's solution (sodium-citrate saline-dextrose, citric acid, high dilution), and five bloods in ACD were flown to Paris and back. These bloods were not placed in a refrigerator but were simply wrapped in the original cartons in which the empty bottles had been received. Due to the exigencies of transatlantic flight during war in winter, a complete itinerary was not obtainable. However, the dioxane indicators had melted on return. Four of these bloods were transfused into individual recipients, and in no case was survival satisfactory. These bloods were from 19 to 20 days old, and survival was less than 30 per cent.

These two practical experiments illustrate forcibly the need for constant refrigeration to obtain adequate preservation of blood. This is particularly important in the matter of transportation and the handling incident to forwarding to battle areas. It was found that the optimal range of refrigeration lies between 4 and 10°C. and that 6° is probably preferable. It was also found that once deteriorative changes start in bloods stored above optimal

(Continued on page 128)



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## RADIOACTIVE BLOOD CELLS

(Continued from page 126)

temperature, subsequent refrigeration at optimal temperature does not retard the initial rate of deterioration. Refrigeration from the time of drawing up to the time of administration is an absolute essential. In summary, then, it was found that whole blood taken in ACD may be safely transfused after refrigerated storage either in depot or during air, land, or sea transportation up to 21 days.

### Military Uses of Whole Blood

The first use of whole blood in military surgery is replacement of lost blood due to wounds. The second use is the alleviation of a characteristic of the circulation in peripheral-vascular collapse, namely, the trapping out of active circulation within capillary beds of large amounts of red cells. This trapping leads to widespread anoxemia of tissue and all organs throughout the body, with eventual damage to the function of parenchymal cells. In addition to replacement of lost blood volume, successful therapy of shock depends upon the return of these trapped cells to active circulation, and the restoration to normal of capillary flow through all the organs. Probably far more serious than the known damage to the renal mechanism of the administration of badly preserved blood is the failure of such blood to accomplish its intended purpose, namely, restoration of circulation.

The reutilization of hemoglobin iron from non-viable cells was found to be about 60 per cent, even when large transfusions of poorly preserved cells were given. Since the utilization of iron by mouth is notoriously small, normally one to three per cent, the non-viable cells of these stored bloods served the useful purpose of supplying larger quantities of iron for red-cell regeneration than could ordinarily have been supplied. This had a favorable effect in hastening blood regeneration during convalescence.

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(Concluded from page 128)

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M. I. T. Graduates who want to locate in his particular area*

**ALABAMA**

ROBERT C. STOBERT '12, P. O. Drawer 1392, Birmingham

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LESLIE A. JACKSON '09, Manager, Little Rock Municipal Water System, Little Rock

**CALIFORNIA**

EDWARD J. RILEY '09, Graybar Electric Company, Inc., Ninth and Howard Streets, San Francisco

FORD W. SAMMIS '28, 433 South Spring Street, Los Angeles 13

**COLORADO**

ALFRED E. PERLMAN '23, Denver and Rio Grande Western Railroad Company, Denver 1

**CONNECTICUT**

FREDERICK W. GREEN '32, Nash Engineering Company, Wilson Avenue, South Norwalk (Bridgeport area)

GEORGE L. MYLCHREEST '10, 238 Palm Street, Hartford

CHARLES E. SMITH '00, Railroad Office Building, New Haven

**DISTRICT OF COLUMBIA**

WILLIAM C. MEHAFFEY '17, 1630 North Greenbrier Street, Arlington, Virginia

**FLORIDA**

GEORGE W. SIMONS '15, Hildebrandt Building, Jacksonville

CLARENCE P. THAYER '23, 4212 N. W. Sixth Avenue, Miami

FRANKLIN O. ADAMS '07, 305 Morgan Street, Tampa

**GEORGIA**

WILLIAM E. HUGER '22, 11 Marietta Street, N.W., Atlanta 1

**ILLINOIS**

ROBERT W. CLYNE '30, American Steel Foundries, 400 North Michigan Ave., Chicago 11

**INDIANA**

FRANK C. BALKE '14, Balke and Krauss Company, 427 West Market Street, Indianapolis

**KANSAS**

FRED C. KOCH '22, Winkler-Koch Engineering Co., 335 West Lewis Street, Wichita

**KENTUCKY**

TINSLEY W. RUCKER III '31, The Crescent Panel Company, 32d and Market Streets, Louisville 12

**LOUISIANA**

THEODORE O. HOTARD '12, 221 Pelican Avenue, New Orleans 14

**MAINE**

FRANK A. KNIGHT '38, Eastern Corporation, Bangor

LEWIS D. NISBET '09, 44 Montrose Avenue, Portland

**MARYLAND**

GEORGE W. SPAULDING '21, 1605 Lexington Building, Baltimore 1

**MASSACHUSETTS**

ROBERT F. BURNETT '10, 85 North Main Street, Fall River

A. RUSSELL PIERCE, JR. '31, Palmer Scott Boatyard, New Bedford

LYNN WETHERILL '25, High Voltage Bushing Engineering Division, General Electric Company, 100 Woodlawn Avenue, Pittsfield

ALBERT D. KING '32, De Bell and Richardson, 3 Post Office Alley, Springfield

**MICHIGAN**

ADAM K. STRICKER '29, 1227 Bishop Road, Grosse Point Park, Detroit

**MINNESOTA**

LELAND CLAPPER '09, 5600 London Road, Duluth

CHARLES W. DREW '19, Minneapolis-Honeywell Regulator Company, Minneapolis

**MISSOURI**

HARRY L. HAVENS '09, Havens Structural Steel Company, 1713 Crystal, Kansas City

WESLEY W. WEDEMAYER '30, Wedemeyer and Hecker, Architects, 319 North Fourth Street, St. Louis 2

**MONTANA**

WALTER R. C. RUSSERT '18, Anaconda Copper Company, Butte

**NEBRASKA**

JOHN M. HANLEY '30, Northern Natural Gas Company, Aquila Court Building, Omaha

**NEW HAMPSHIRE**

BLAYLOCK A. THERTON '24, 142 Main Street, Nashua

**NEW JERSEY**

GEORGE A. CHUTTER '21, 109 Central Avenue, Glen Rock (Newark area)

**NEW YORK**

ANDREW F. ALLEN '12, State Department of Health, Albany

THOMAS H. SPELLER '29, General Engineering Company, 785 Hertel Avenue, Buffalo 7

JOHN C. FRUIT '02, Equitable Life Assurance Society of U. S., 393 7th Avenue, New York 1

RAYMOND G. BROWN '16, Comstock and Westcott Inc., Niagara Falls

C. KING CROFTON '22, 1132 Lincoln-Alliance Bank Building, Rochester 4

A. J. TACY '27, Room 645, Building No. 2, General Electric Company, Schenectady

J. MURRAY HASTINGS '13, 606 Hills Building, Syracuse

**OHIO**

JAMES B. HOLDEN '30, 276 Sundale Road, Akron

KENNETH A. WRIGHT '19, Johnson Service Company, 1905 Duniap Street, Cincinnati 14

CHARLES B. ROWLEY '12, Charles Bacon Rowley and Associates, Keith Building, Cleveland

JAMES H. BLODGETT '20, Superintendent, Division of Sewage Treatment, Columbus

EUGENE HERZOG '27, 26 Cliff Street, Dayton

CHARLTON P. WHITTIER '27, Owens-Illinois Glass Company, P. Box 1035, Toledo 1

**OKLAHOMA**

W. J. SHERRY '21, 804 Kennedy Building, Tulsa

**OREGON**

ROBERT E. CUSHMAN '06, 618 N. W., Front Street, Portland 9

**PENNSYLVANIA**

PERCY TILLSON '06, 3003 North Front Street, Harrisburg

EDWARD J. HEALY '23, Philadelphia Brewing Company, 6th and Clearfield Streets, Philadelphia 33

HAROLD L. LANG '09, Carnegie Institute of Technology, Pittsburgh 13

G. C. WILSON '15, 907 East King Street, Lancaster

LOUIS MORSE '96, York Corporation, Roosevelt Avenue, York

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DONALD G. ROBBINS '07, c/o International Braid Company, 47 Charles Street, Providence

**TENNESSEE**

DANA M. WOOD '06, 619 Union Building, TVA, Knoxville

DONALD W. SOUTHGATE '11, Nashville Trust Building, Nashville 3

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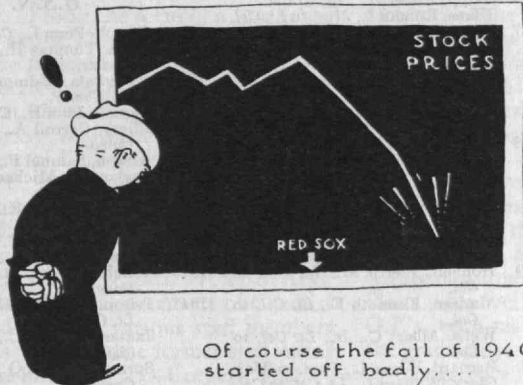
PHILIP N. CRISTAL '17, 720 East Wisconsin Avenue, Milwaukee 2

# TECHNOLOGY MEN IN ACTION

## ALUMNI AND OFFICERS IN THE NEWS

### FINANCIAL SURVEY

PROPHETS OF GLOOM PREDICT DEPRESSION INEVITABLE. STOCK MARKET DROPS SHARPLY (News Item)



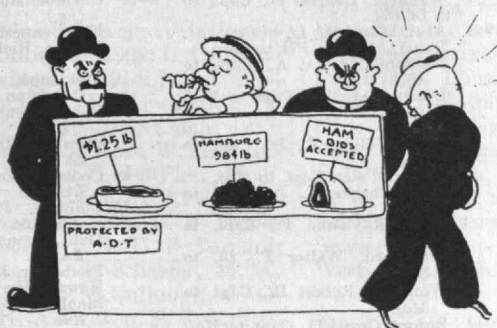
Of course the fall of 1946 started off badly....

COAL MINERS PLAN EARLIER VACATION THAN USUAL (News Item)



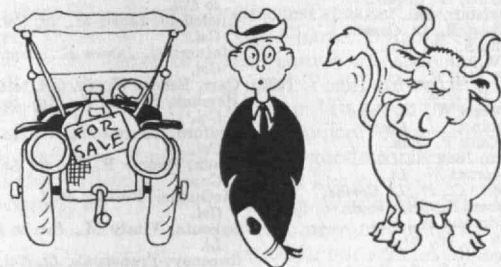
and it looked like a long, cold, and expensive winter....

"MEAT TO REMAIN SCARCE THROUGH 1947," SAYS ANDERSON (News Item)



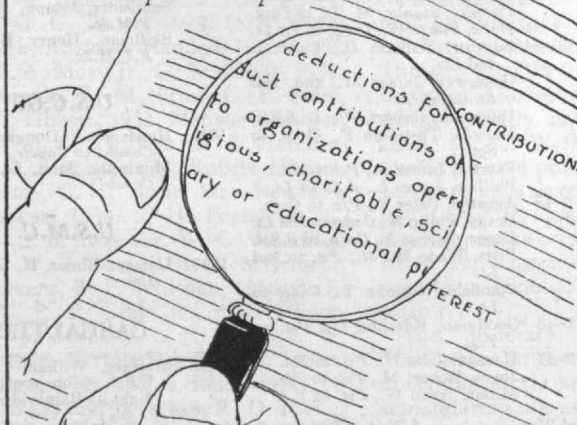
and the vegetarians were getting new converts daily....

CAR INSURANCE RATES UP 6%. MILK RISES 1¢ A QUART (News Items)



and a lot of new pedestrians went off the milk wagon....

BUT, wasn't it a relief to discover that the Income Tax boys were still anxious to save you money?





# TECHNOLOGY MEN IN ACTION

## M.I.T. MEN AT WAR

Up to November 15 over 9,634 Institute Alumni, including 38 Admirals, 13 Commodores, and 99 Generals, were reported as being in the active naval or military service of the United Nations. Among the new promotions to be reported are Brig. Gen. James D. McIntyre '15, Commodore Penn L. Carroll '17, and Brig. Gen. Edgar P. Sorensen '25. There were 325 Alumni who had been decorated, and 227 who had made the supreme sacrifice.

With its issue dated November, 1942, The Technology Review began publishing "M.I.T. MEN AT WAR." Although hostilities have ended, The Review plans to continue this page for the next several months in order to record information on M.I.T. men in the services which, to date, has been impossible to obtain. As a matter of convenience, promotions and corrections in the rank previously given are grouped under a single heading, "Changes in Rank." The Review Editors are greatly indebted to the many Alumni and other readers who are continuing to co-operate so helpfully in reporting inevitable errors of omission and commission which they note in these listings.

### DECORATIONS

- 1919 Paulsen, Carley H., *Capt.*, U.S.N., honorary appointment as a Commander of the Military Division of the Order of the British Empire—for distinguished service to the Allied cause.
- 1926 Humphreville, Bruce T., *Col.*, U.S.A., Bronze Star.
- 1928 Roth, Richard, *Lt. Comdr.*, U.S.N., Bronze Star—for exceptionally meritorious service in connection with forward base development at Manus, Admiralty Islands.

### NEW LISTINGS

#### U.S.A.

- 1916 Hamill, Charles H., *Maj.*
- 1942 Heineman, Harry J., Jr., *Pvt.*
- 6-46 Boesel, Robert W., *Lt.*
- Daley, Daniel H., *Capt.*
- Edelman, Bennett H., *Lt.*
- Nowak, Shalom P., *Pvt.*
- Waller, Marshall, *Capt.*
- Westbrook, Charles B., *Capt.*
- Wyllie, Alexander, *Capt.*
- Zell, John H., *Maj.*
- 2-47 Zimmerman, Bruce D., *Corp.*

#### U.S.N.

- 2-46 Dickey, Russell G., *Ens.*
- 6-46 Bliss, Louis K., *Lt. Comdr.*
- Collins, Seymour, *Ens.*
- Devey, Gilbert B., *Lt. Comdr.*
- Filbert, John S., Jr., *Ens.*
- Gill, Paul W., *Lt. Comdr.*
- Harkelroad, Neil E., *Lt.*
- High, John R., *Ens.*
- Hughes, Joseph W., *Lt. Comdr.*
- Koch, Lincoln C., *Lt. Comdr.*
- Lanneau, Keith P., *Ens.*
- MacLachlan, John R., *Lt.*
- Patrick, Kenneth W., *Lt.*
- Powell, Lucien C., Jr., *Lt. Comdr.*
- Seibels, Robert E., Jr., *Comdr.*
- Sellman, Edmund W., *Ens.*
- Serrie, John A., Jr., *Ens.*
- Smith, James H., Jr., *Lt.*
- Thomas, Newell E., *Lt. Comdr.*
- Washington, Thomas J., *Comdr.*
- Woods, Clifford C., Jr., *Ens.*
- Wooten, Guy G., *Ens.*
- 10-46 Walsh, Clarence J., Jr., *E.M.Sc.*
- 2-47 Hyde, Wallace E., Jr., *E.T.M.Sc.*
- Langley, James M., Jr., *Lt.*

#### U.S.C.G.

- 10-44 Harris, Roderick L., *Lt.*

#### CANADA

#### R.C.N.V.R.

- 1939 Hammond, Ernest R., *Lt. Comdr.*

#### CHINA

#### Navy

- 6-46 Chen, Chen I., *Ens.*
- Chen, Yu S., *Ens.*
- Chiang, Ta C., *Ens.*
- Chiang, Wei-Pang, *Ens.*
- Chu, Pang I., *Ens.*
- Kuan, Ming, *Ens.*
- Lin, Chen M., *Ens.*
- Lo, To T., *Ens.*
- Tu, Hsien C., *Ens.*
- Wei, Chao Y., *Capt.*
- Weng, Chia L., *Ens.*
- Yeh, Yu H., *Ens.*

### CHANGES IN RANK

#### Army

- 1911 Hall, Edward R., *Maj. to Lt. Col.*
- Schurig, O. Robert, *Lt. Col. to Col.*
- 1915 McIntyre, James D., *Col. to Brig. Gen.*
- 1916 Baker, Norman D., *Capt. to Maj.*
- 1917 Doon, James W., *Maj. to Lt. Col.*
- Williamson, Herbert C., *Lt. Col. to Col.*
- 1920 Castor, Amasa H., *Maj. to Lt. Col.*
- Dopmeyer, Arthur L., *Lt. Col. to Col.*
- 1921 Campbell, Elmer W., *Capt. to Maj.*
- Jackson, Dugald C., Jr., *Lt. Col. to Col.*
- 1923 Custis, Arthur B., *Lt. Col. to Col.*
- Kane, Nicholas, *Maj. to Lt. Col.*
- 1924 Walker, Hugh L., *Maj. to Lt. Col.*
- Walterskirchen, William M., *Capt. to Maj.*
- 1925 Dunbar, John C., *Lt. Col. to Col.*
- Possel, Rankenius J., *Lt. Col. to Col.*
- Sorensen, Edgar P., *Col. to Brig. Gen.*
- Warburton, Frank W., *Lt. Col. to Col.*
- 1926 Fogg, George A., *Capt. to Maj.*
- Humphreville, Bruce T., *Lt. Col. to Col.*
- Littlefield, Lloyd M., *Lt. Col. to Col.*
- McInerney, James E., *Capt. to Col.*
- 1927 Carr, Ernest W., *Lt. Col. to Col.*
- Hershey, Samuel F., *Maj. to Lt. Col.*
- Tedford, Charles H., *Maj. to Lt. Col.*
- 1928 Black, George P. W., *1st Lt. to Capt.*
- McGuane, Frank, *Maj. to Lt. Col.*
- Sakouta, Vitaly M., *Pvt. to 2nd Lt.*
- Sweeney, Francis C., *Lt. Col. to Col.*
- 1929 Conner, Steven B., *Capt. to Col.*
- Ellsworth, John B., *Lt. to Capt.*
- Lucey, John F., *Lt. Col. to Col.*
- 1930 Appleton, Ralph L., *Maj. to Lt. Col.*
- Keely, James E., *Capt. to Maj.*
- Parmakian, John, *Lt. Col. to Col.*
- 1931 Dame, Frank E., *Lt. to Capt.*
- Morin, Arsene W., *Maj. to Lt. Col.*
- 1932 Hinrichs, John H., *Lt. Col. to Col.*
- Ikuno, Frank M., *Capt. to Maj.*
- 1933 Dunbar, Oliver C., *Capt. to Maj.*
- MacDonald, Hugh W., *Lt. Col. to Col.*
- Mills, James P., *Capt. to Maj.*
- Peterson, Edward C., *1st Lt. to Capt.*
- 1934 Harman, John J., Jr., *Maj. to Lt. Col.*
- Snyder, Graves H., *Lt. Col. to Col.*
- 1935 Dangel, Phoenix N., *Maj. to Lt. Col.*
- Deming, Arthur K., *Maj. to Lt. Col.*
- Powers, William F., *Lt. Col. to Col.*
- Zich, Arthur I., *Lt. to Capt.*
- 1936 Bosworth, Lawrence A., *Capt. to Maj.*
- Shott, Kathleen V., *1st Lt. to Capt.*

- Tripp, Robert C., *Lt. to Col.*
- Ullans, Roman I., *Maj. to Lt. Col.*
- 1937 Bourke, Jacob R., *Lt. to Capt.*
- Goodwin, Harry B., *Maj. to Lt. Col.*
- Haggerty, Robert F., *Capt. to Maj.*
- McNamee, William L., *Lt. Col. to Col.*
- 1938 Betts, Austin W., *Lt. Col. to Col.*
- Bowie, Robert G., *Maj. to Lt. Col.*
- Bruce, Burton B., *Lt. Col. to Col.*
- Gillon, Paul N., *Lt. Col. to Col.*
- Henderson, Richard, *Capt. to Maj.*
- LaDue, Paul E., *Capt. to Col.*
- 1939 Honnell, Pierre M., *Lt. Col. to Col.*
- Madsen, Kenneth E., *Lt. Col. to Col.*
- Wells, Albert C., Jr., *Lt. Col. to Col.*
- 1940 Bernard, Edgar L., *Capt. to Maj.*
- Clark, William L., *Lt. Col. to Col.*
- Daudelin, Roland G., *Lt. to Capt.*
- Goldberg, Louis G., *Maj. to Lt. Col.*
- MacKler, Bruce, *Lt. to Capt.*
- Piotti, John J., Jr., *Lt. to Capt.*
- Schermerhorn, John G., *Capt. to Lt. Col.*
- Wampler, Charles E., *Capt. to Lt. Col.*
- 1941 Abel, Milton A., *Lt. to Capt.*
- Baum, Alan W., *Pvt. to Corp.*
- Beaupre, Edward A., *Capt. to Maj.*
- Dixon, Donald J., *Capt. to Maj.*
- Fajardo, Tirso G., *Lt. Col. to Col.*
- Hart, William F., Jr., *Capt. to Maj.*
- Horton, Peter, *Capt. to Maj.*
- King, Charles H., Jr., *Capt. to Maj.*
- Koch, Raymond F., *Capt. to Maj.*
- Schuchard, Walter F., *Lt. to Capt.*
- Winialski, Robert H., *Capt. to Maj.*
- 1942 Buford, Curtis D., *Capt. to Maj.*
- Hull, Arnold R., *Capt. to Maj.*
- Jess, Edward O., *A.C. to Capt.*
- Katz, Maurice N., *1st Lt. to Capt.*
- Saylor, Harlan K., *Capt. to Lt. Col.*
- Unson, Miguel R., *Lt. to Capt.*
- 1943 Guild, Walter A., Jr., *Cadet to 1st Lt.*
- Miller, Andrew, Jr., *Pvt. to Corp.*
- Porosky, Stanley M., *Lt. to Capt.*
- 2-44 Dube, Pierre W., *Corp. to 1st Lt.*
- 10-44 Bamber, William H., *Cadet to 2nd Lt.*
- Gassaway, James M., *2nd, 2nd Lt. to 1st Lt.*
- Hagopian, Robert, *Pfc. to S.Sgt.*
- Nichols, Theodore F., *Corp. to Sgt.*
- Patrick, James B., *Pvt. to Lt.*
- Phillips, James L., *A.C. to Lt.*
- 6-45 Agoston, Peter P., *Pfc. to Corp.*
- Brady, Philip B., *Cadet to 2nd Lt.*
- Lopez, George A., *Corp. to S.Sgt.*
- Pitts, Wade H., Jr., *Pvt. to 2nd Lt.*
- Stanfield, Norman T., *Cadet to Lt.*
- 2-46 Goodman, Edmund G., *Pvt. to T.4.*
- 2-47 Hansen, John H., *Pvt. to Sgt.*
- Joyce, Robert M., *Pvt. to Pfc.*
- Millen, Irwin W., *Pvt. to T.4.*

### U.S.N.

- 1917 Carroll, Penn L., *Capt. to Commo.*
- 1921 Frost, Thomas H., *Lt. Comdr. to Comdr.*
- 1923 Pomykala, Edmund S., *Lt. to Lt. Comdr.*
- 1924 Carson, John H., *Comdr. to Capt.*
- 1925 Oliver, Carroll A., *Lt. Comdr. to Comdr.*
- 1933 Allison, Samuel F., *Lt. to Comdr.*
- 1936 Paskowski, Michael, *Lt. (j.g.) to Lt. Comdr.*
- 1937 Miller, William R., *Lt. Comdr. to Comdr.*
- 1939 Greely, James W., *Lt. Comdr. to Comdr.*
- 1940 Wright, Boger Lt. (j.g.) to Lt. Comdr.
- 1941 Ivison, Sterling H., Jr., *Lt. to Lt. Comdr.*
- Jantzen, Alice C., *Ens. to Lt. (j.g.)*
- Springer, Frank G., *Lt. Comdr. to Comdr.*
- 1942 Terry, James H., Jr., *Lt. to Comdr.*
- Dimitrijevic, William J., *Lt. Comdr. to Comdr.*
- Maynard, Harry C., *Lt. to Lt. Comdr.*
- 1943 Baumberger, John R. R., *Ens. to Lt.*
- 2-44 Chamberlain, John, *Ens. to Lt. (j.g.)*
- Ela, Dennett K., *Lt. to Comdr.*
- Maoni, Richard C., *Ens. to Lt. (j.g.)*
- Middleton, John R., Jr., *Lt. Comdr. to Comdr.*
- Rehler, Kenneth M., *Ens. to Lt. (j.g.)*
- Schwartz, Robert A. D., *Ens. to Lt. (j.g.)*
- 10-44 Cooper, George R., Jr., *Ens. to Lt. (j.g.)*
- 6-45 Cullinan, John H., *S.1c. to A.R.T.Sc.*
- Duff, Samuel E., *2nd, A.S. to Ens.*
- Freiberger, John J., *A.S. to Ens.*
- Howard, Herbert C., *A.S. to Ens.*
- MacKay, William J., *A.S. to Ens.*
- 2-46 McDonagh, Robert J., *A.E.T.M.Sc. to A.E.T.M.Sc.*
- 2-47 Forsythe, William M., *3d, A.C. to S.2c.*
- Larson, Ray E., *S.1c. to E.T.M.Sc.*
- Michtom, Anton, *S.1c. to A.E.T.M.Sc.*
- Reichert, William G., Jr., *S.1c. to E.T.M.Sc.*
- Schneider, Joseph, *S.1c. to A.E.T.M.Sc.*
- Skilman, Henry H., *S.1c. to E.T.M.Sc.*

### U.S.C.G.

- 1943 Henderson, Douglas B., *Lt. Comdr. to Comdr.*
- Montrelo, John, *Lt. Comdr. to Comdr.*

### U.S.M.C.

- 1943 Dorsey, Elmer T., *Maj. to Lt. Col.*

### CASUALTIES

- 1942 \*McHarg, William C., *2nd Lt., U.S.A. — on routine training flight at Bainbridge, Ga.*

★ Killed in Action

† Missing in Action

‡ Prisoner of War

\* Died or Killed in Service

\*\* Wounded

## NEWS FROM THE CLUBS AND CLASSES

## CLUB NOTES

*American Chemical Society Luncheon*

The semiannual get-together of the M.I.T. Alumni, students, and staff members working in the field of chemistry was held during the fall convention of the American Chemical Society in Chicago. This meeting at the Palmer House on September 10 took the form of a luncheon, at which about 120 Technology men and guests were present.

As has been customary at these meetings, Mike Flett '18 served as chairman. Professor W. G. Whitman '17, Head of the Department of Chemical Engineering, and Professor E. H. Huntress '20, chairman of the Graduate School of the Department of Chemistry, spoke briefly on the problems arising from the large increase in student registration at the Institute. Professor A. C. Cope, Head of the Department of Chemistry, introduced the various staff members present, as well as some former staff members. These included C. D. Coryell, T. R. P. Gibb '40, R. S. Harris '28, R. C. Hockett, C. B. Purves, W. C. Schumb, A. F. Thompson, and W. L. Gilliland '25. The chairman announced that at the Atlantic City meeting next spring the Alumni would meet at a cocktail party.

Among the Alumni present at the luncheon were the following: 1909: L. C. Shaw; 1913: J. W. Livingston; 1914: J. J. R. Bristow, D. F. Gould, R. V. Townend; 1915: Allen Abrams; 1916: W. B. Leach; 1917: Duncan MacRae, W. B. Ross, W. G. Whitman; 1918: H. M. Cyr, L. H. Flett, M. F. Parker; 1919: G. R. Bond, Jr., A. G. Richards, B. H. Sherman; 1920: L. B. Hitchcock, G. R. Owens; 1921: D. P. Barnard, H. A. Kaufmann, J. J. Schaefer, M. A. Yountz; 1922: C. R. McCullough, C. O. Moore; 1923: H. A. Bruson, F. P. Squibb, E. W. Thiele; 1924: R. H. Lambert, W. G. Lovell, W. L. Morgan, R. P. Schreiber; 1925: W. L. Gilliland, R. N. Palmer, Raymond Reuter, J. F. Walker; 1926: A. G. Aylies, J. H. Boyd, B. T. Humphreville; 1927: R. G. Dunning, H. G. R. Schneider; 1928: W. G. Armstrong, R. S. Harris, J. K. Roberts, G. C. Toone; 1929: E. F. Izard, J. G. Mark, Anthony Standen; 1930: G. E. Barker, S. A. Moss, Jr., G. W. Rigby; 1931: Fred Ebersole, R. M. Price, C. E. Starr, Jr., W. B. Tibbets; 1932: Manson Benedict, J. B. Calkin, R. K. Flege, W. S. Hutchinson, F. R. Russell; 1933: Robert Heggie, E. L. Hume, C. H. Mohr, Max Neuhaus, Peter Parker; 1934: S. H. Foster, R. C. Gunness, S. B. Sweetser, W. C. Wooding, Jr.; 1935: W. T. Barker, A. L. Merrifield, W. B. Stevens, R. P. Whitney; 1936: A. E. Bearse, T. R. P. Gibb, Jr., Alice Hunter Kimball and husband, L. N. Leum, E. W. S. Nicholson, Arthur Sedoff, J. L. Speirs, B. M. Sturgis; 1937: W. S. Emerson, C. H. Reed, L. S. Tracy, Jr.; 1938: R. D. Flynn, F. J. Kolb, Jr., F. E. Ray, W. J. Wald;

1939: P. M. Bernays, G. E. Moos, D. W. Mullin, R. F. Phillips; 1940: Karl Pfister, S. D. Stookey; 1941: Henry Avery, Ralph Landau, J. P. Sanderson, E. N. Shaw, R. C. Swann, E. B. Weinberger, A. C. Zettlemeyer; 1942: J. T. Coe, J. B. Davidson, J. McK. Mochel, B. L. Skinner; 1943: S. N. Steen, J. V. Fitzgerald.

*Technology Club of Chicago*

The honorary secretaries, officers, and directors of the Club met at the University Club for luncheon on Saturday, October 5, to honor Professor B. A. Thresher '20, Director of Admissions at the Institute. Professor Thresher stopped off in Chicago for a few hours on his way to the West Coast.

Bill Steinwedell '25, President, asked Professor Thresher to give figures on the enrollment at the Institute. The freshman class numbers about 900 with a total Institute enrollment of approximately 5,000. Plans were well worked out to house the G.I.'s, both married and single, as well as the graduate students. The enrollment is up to capacity, which will be the condition until next fall.

Bill Steinwedell told of the plan to hold frequent dinner meetings with speakers from the Institute, the better to acquaint the Alumni with the affairs of the Institute. This idea met with the approval of all attending.

Those present on this occasion were the following: Lonsdale Green '87, Sherry O'Brien '17, Ralph Sargent '18, R. W. Van Kirk '18, S. P. Griffin '20, B. A. Thresher '20, J. W. Barriger '21, E. G. Farrand '21, F. D. O'Neill '25, William Steinwedell '25, R. W. Clyne '30, and R. M. Nelson '30. — SIDNEY P. GRIFFIN '20, Secretary, Public Service Company of Northern Illinois, 72 West Adams Street, Chicago 3, Ill.

*Rocky Mountain Technology Club*

A dinner meeting was held at the University Club in Denver on October 23. In the absence of the President, the meeting was called to order after dinner by the Secretary. In attendance were 17 members, two guests (Walter Ruble and Nelson Love of Colorado Engineering Council's educational coordinating committee), and Professor B. A. Thresher '20, Director of Admissions at the Institute. The Secretary stated that when Anthony Perry '29, ex-Secretary, had recently left for Washington, D. C., no one could be found promptly among our members to serve as secretary: the then president had, therefore, appointed himself secretary and resigned as president. This left Fred P. Baker '19, Vice-president, in the role of president. (Sounds complicated, but it wasn't.)

The Secretary introduced Professor Thresher, who gave us an hour and a half of combined talk and question-answer session, relating to wartime and present conditions and activities at the Institute. Every-

one present enjoyed his remarks very much, and we deeply appreciate his kindness in giving us this information. Professor Thresher suggested informally for our consideration the advisability of changing the name of this organization to the "M.I.T. Club of Denver," or the "M.I.T. Club of Colorado," or the "Rocky Mountain M.I.T. Club," or something of this nature, to stress M.I.T. No action was taken, but it should be considered and acted on in the near future.

The report of the nominating committee was then read, and it was voted unanimously to close the nominations and have the Secretary cast a unanimous ballot for the nominees, as follows: President, Arthur L. Hill '23, 1033 Humboldt Street, Denver 3, Colo.; Vice-president, Bernard S. Coleman '19, 5635 East Sixth Avenue, Denver 7, Colo.; Secretary-Treasurer, Robert S. Nelson '40, 4886 Perry Street, Denver 12, Colo. There are no funds in the treasury and no outstanding bills. We are "broke" but at least solvent. — ROBERT S. NELSON '40, Secretary, 4886 Perry Street, Denver 12, Colo.

*Technology Club of Central Pennsylvania*

After four years, it was indeed gratifying to resume our club meetings on the evening of October 16. A dinner meeting was held at the Penn-Harris Hotel in Harrisburg, and we were fortunate enough to have as our guest speaker, our genial Alumni Secretary, Charles E. Locke '96. It seemed like a real reunion when members from the towns around York, Harrisburg, Lancaster, and Lebanon, Pa., got together renewing old acquaintances before dinner; and it was mighty good to clasp those hands which we each knew had contributed their bit to winning World War II. Among us were several new members who have recently settled in our area. And so, over a span of memories of the Institute, spread from '96 to '44, the talk of Technology was revived.

After dinner our President, Frank A. Robbins, Jr., '02 spoke a few words of welcome and introduced Charlie Locke, who proceeded with a very interesting, informal résumé of recent happenings at the Institute. We learned how the student load had been increased to include all it is possible to handle, in view of the overwhelming number of applicants. We learned the business details involved in the handling of this increased load, the housing problems in the accommodation of G.I. students, the food problems in the serving of 5,000 meals a day, and, in general, the scope of instruction now under way. Mention was made of the needs for expansion and endowment fund increases, of the new freshman camp and a splendid enlarged infirmary, of the projected plans for a new library, and the hopes for a large auditorium in the not too distant future. It was apparent that affairs in Cambridge have been moving almost too rapidly to comprehend, especially since, in



addition to this expansion, the changing over from a war to a peacetime status was involved. With Charlie's help, we were all brought up to date on what a grand job Technology is still doing.

A short résumé of the few contributions our Club was able to make through its officers, since we last met, was presented by the Secretary. Bulletins have been posted at various points extending hospitality to Alumni in the services, whom we might help while in this area, and a district placement service for Alumni returning from the Services was set up. At the close of the meeting your Secretary for the past five years was pleased to nominate, and hear elected, Harold R. Spaans '30 of Harrisburg, who is now discharged and able to resume this post.

Club members present were as follows: L. S. Morse '96, F. A. Robbins, Jr., '02, P. A. Staples '04, P. E. Tillson '06, C. W. Gram '09, C. J. Walton '14, G. C. Wilson '15, F. E. Thomas '17, F. H. Wells '18, E. J. Mink '22, C. K. Miller '23, B. J. Stevens '23, T. P. Kuo '24, A. R. Brugnioni '26, J. P. Connelly '28, J. L. Pontz '28, F. A. Thas '28, H. A. Robinson '30, C. E. Fink '33, E. F. Kreider '43, R. B. English '45. — HAROLD R. SPAANS '30, *Secretary*, Bell Telephone Company of Pennsylvania, 210 Pine Street, Harrisburg, Pa.

### *Technology Club of Hartford*

The officers and directors of the Club were called together in Hartford on October 9 by the President, Norman J. Vile '16, to lay plans for the 1946-1947 season. Final arrangements were made for a joint meeting with the New Haven County Technology Club, scheduled for October 30 at Strathcona Hall in New Haven. Dr. Compton will be the speaker; and his subject, "The Bikini Atom Bomb Tests." It is expected that this meeting will attract considerable interest.

The Club's constitution revision committee, composed of Roger W. Davis '12, chairman, J. Henry L. Giles '29, Thomas D. Green '26, and Francis E. Stern '16, met with the officers and directors and then retired to begin its work of redrafting the constitution. This committee will render its report at the first regularly scheduled meeting of the Club. — FRANKLIN S. ATWATER '38, *Secretary*, 109 Elbridge Road, New Britain, Conn.

### *Indiana Association of the M.I.T.*

The Association held its first meeting of the fall season at the Apex Grill on 16th Street on October 9. Roy Thurman (Rose Polytechnic Institute '06), manager of power sales for the Indianapolis Power and Light Company, told us about the "Terra Temp." This device is a heat pump, or reversed cycle refrigeration unit, unique in that the earth itself is the source of heat. It was pointed out that ordinary air is a satisfactory heat source down to 26 degrees F. Such a unit can be used in mild climates and is being used in California. Deep well water at 50 to 55 degrees can also be used. The difficulties with this are costliness and lack of wells.

The Terra Temp unit described has been developed by Robert C. Webber of Indianapolis. Tests on Mr. Webber's home were

made during the last heating season. This home had 7,100 cubic feet in the first floor and 6,800 cubic feet in the basement. The cost of operating the unit, keeping the house temperature at 74 degrees F., was \$127 with an energy charge of two cents a kilowatt-hour, or about twice the cost of heating with coal at \$10.75 a ton. Manufactured gas at 45 cents a therm was the next most costly method; and oil, at eight and a half cents a gallon, was between gas and coal. The actual unit used a three-horsepower compressor unit and a one-horsepower fan. The coefficient of performance was 3.61. A theoretical maximum of eight, with a practical maximum of six, is expected. Freon 22, circulated in 500 feet of three-quarter-inch copper tubing buried six feet below the surface of the ground, was used to transfer the heat. The predicted price for such a domestic unit is \$1,000. Mr. Thurman mentioned the advantages of compactness and cleanliness and then became enthusiastic over the halving of coal consumption for heating achieved by this equipment. In terms of conservation, the life of our coal deposits would be doubled. A lively discussion period concluded the meeting.

The following members were present: J. Lloyd Wayne, 3d, '96, H. S. Morse '03, John H. Babbitt '17, Harry C. Karcher '25, Paul V. Jewell '26, Stanley C. Boyle '27, Bob Wallace '27, Thomas G. Harvey '28, Russell Fanning '30, Gustav W. Klumpp '30, Samuel H. Hopper '33, Paul E. Smith '36, and Gordon E. Holbrook '39. — JOHN H. BABBITT '17, *Secretary*, 3734 Carrollton Avenue, Indianapolis 5, Ind.

### *Technology Club of Southern California*

An informal luncheon meeting honoring Professor B. A. Thresher '20, Director of Admissions at the Institute, was held on October 18 at the Rodger Young Auditorium in Los Angeles. Guests present were Dr. Edward Sanders of Pomona College, Claremont, Calif., and Hugh McDowell of the Columbia Pictures Corporation.

Members present were the following: Robert L. Alder '37, William C. Allen '34, Philip K. Bates '24, John C. Byrne '24, Kenneth W. Comsey '39, George M. Cunningham '27, Helmut W. Geyer '26, Page Golsan '12, Page Golsan, Jr., '34, Marcellus F. Graupner '12, Harvey M. Hickok '03, Jerauld O. Johnson '44, Kenneth D. Kahn '15, H. Bruce Leslie '38, Henry F. Lippitt '36, C. Lauren Maltby '22, Fred W. Meyer '36, John B. Pitkin '37, Anthony Thormin '27, and D. Donald Weir '38. — D. DONALD WEIR '38, *Secretary*, 1492 North Doheny Drive, Hollywood 46, Calif.

### *Technology Club of Philadelphia*

Alden H. Waitt '14 gave us a splendid inside story of Chemical Warfare Service activities during and after the war. His theme of "Preparedness Pays Big Dividends" was logically developed into an interesting and illuminating address. General Waitt admitted that very little of the vast quantities of chemicals manufactured and shipped to Europe were actually used and explained why. The Germans had produced more than 250,000 tons of gas and gas-filled explosives and stored them in various

depots throughout Germany. They did not dare to use any, however, because their intelligence service revealed a much larger and better supply available for retaliation at a moment's notice. That was dividend number one. Research investigations during the war on chemicals the Germans were making as well as our own opened new avenues in the cure and treatment of many diseases, both human and animal. Innumerable dividends were declared in this direction as soon as military security permitted.

Dudley E. Bell '17 and Mrs. Bell gave us a fascinating half hour in the art (or science) of telepathy. Mrs. Bell proved that she was able to identify many difficult objects selected by Dud from the audience. She was even able to read the long numbers on bills, all with no apparent assistance from Dud. Although the Bells maintain that they are strictly amateurs, we believe they are well qualified to take a respectable place among leading professionals.

We missed the friendliness of Clarence Farr '33, who has resigned from the Du Pont Company and is no longer in our section. Good luck, Clare, in your new job. Our President, Herbert W. Anderson '15, announced the death of Arthur C. Dorrance '14 on September 21. Mr. Dorrance was president and general manager of the Campbell Soup Company for many years. He has been a loyal friend of Technology, and his loss will be felt by many friends in the Club as well as others throughout the country. We are all looking forward to the big January meeting, which will be held at the Bellevue-Stratford Hotel on Tuesday evening, January 21, at 6:30 p.m. The exact program will be announced later and too late for inclusion in these notes. But don't forget the date, and bring your friends.

The friendly and congenial attendance at the October dinner numbered 95, as follows: 1897: Wilfred Bancroft; 1902: C. E. Patch; 1905: C. A. Anderson, B. E. Lind-sly; 1906: H. C. Richardson; 1907: H. W. Mahr, H. H. McChesney; 1909: J. N. Brooks; 1912: C. L. Gabriel, R. T. Stone, R. E. Wilson; 1913: C. W. Gotherman, R. W. Weeks; 1914: A. H. Waitt, L. A. Wilson; 1915: H. W. Anderson, T. H. Huff, Solomon Schneider, E. A. Whiting; 1916: Mark Aronson, O. B. Pyle, E. A. Weissbach; 1917: W. J. Beadle, D. E. Bell, A. C. Carlton, Garland Fulton, Francis Goodale, K. L. Harper, O. W. Holt, R. A. Pouchain; 1918: O. D. Burton, G. F. Halfacre, C. A. Lindgren, Jr.; 1919: E. J. Flynn, H. F. Marshall; 1920: Donald Royce; 1921: J. E. D. Clarkson, A. A. Orlinger, R. M. Shaw, Jr.; 1922: P. M. Alden, Joseph Greenblatt, R. S. Hayes, H. F. Metcalf, C. W. Stose; 1923: E. J. Healy, F. H. Travers, Chaplin Tyler; 1924: N. D. Linley, W. L. Morgan; 1925: R. E. Cernea; 1926: H. W. Jones, K. S. Lord, R. W. Richardson, F. E. Washburn; 1927: L. R. MacAdam; 1928: R. M. Harbeck; 1929: G. T. Logan, V. G. Miskjian; 1930: W. H. Wannamaker, Jr.; 1931: W. N. Currier, J. L. Dodson, H. S. Smith; 1932: F. S. Chaplin, C. D. Cummings, John Lawrence, M. T. Meyer; 1933: C. E. Miller, Helen F. Tucker; 1934: M. E. Richardson, Proctor Wetherill; 1935: W. H. Brockett, G. R. Bull, Jr.; 1936: J. A. Myers; 1937: A. E. Reinhardt; 1939: W. F. Corl, J. G. Lord, R. B. Wooster; 1941: C. W. Hargens, S. K. McCauley, H. R. Moody, C. W.

Streed; 1942: J. N. Evoy, Jr., Duncan Wilson; 1943: J. F. Hoey, Jr.; 1944: A. P. Barbato; 1945: W. J. Harwick, K. V. Kratochvil; 1946: M. A. Chomitz, W. H. Peirce; 1948: J. L. Marshall. Among our guests were W. B. Barr, Mrs. Dudley E. Bell, F. C. Kearney, R. F. McKee, and W. R. Nicolls.

For information about Alumni in the Philadelphia area, call Jefferson 5-0642. — ROBERT M. HARBECK '28, *Secretary*, 605 Foss Avenue, Drexel Hill, Pa. *Assistant Secretaries*: SAMUEL K. McCauley '41, 288 Copley Road, Upper Darby, Pa.; FRANK S. CHAPLIN '32, 822 Glendalough Road, Philadelphia 18, Pa.

### *M.I.T. Club of Western Pennsylvania*

The 1946-1947 year was opened by an informal picnic at the home of J. L. Thistle '32. The following attended: E. H. Millard '03, G. A. Morrison '09, G. T. Southgate '10, L. M. Sandston '12, H. H. Hall '14, R. G. Lafean '19, I. K. Peck '21, H. W. Dexter, Jr., '23, T. J. Eaton '26, D. C. Hooper '26, W. H. Reed '27, R. D. Hoak '28, G. M. Hoffman '28, M. M. Kessler '28, B. M. Putich '28, Milton Male '29, E. H. Hayes '31, H. L. Johnson '32, J. L. Thistle '32, A. T. Mason '33, A. H. Munson '33, W. J. Bates '35, E. R. Millen '35, S. C. Johnson '39, P. R. Toolin '39, T. F. Reed '40, Dirk van Dongen '41, and G. S. Brosky '45.

The first formal meeting of the season was held on September 11 at the University Club in Pittsburgh. The following officers and members of the board of governors were announced by President Lafean: President, R. G. Lafean '19; Junior Past President, Ted W. Bossert '20; Vice-president, Howard W. Dexter, Jr., '23; Secretary, William J. Bates '35; Treasurer, Edwin M. Barnes '23; registrar, Harry L. Johnson '32; board of governors — Thomas Spooner '09, I. W. Wilson '11, R. E. Zimmerman '11, R. G. Lafean '19, E. M. Barnes '23, H. W. Dexter, Jr., '23, M. L. Tressel '24, J. L. Thistle '32, and S. C. Johnson '39. After reports by the Secretary and Treasurer, the President assured us that an active program had been laid out for the ensuing year. The members then enjoyed a discussion by Guy Morse Bingham, guest speaker, concerning "Current Trends in Our National Life."

The following members attended the meeting: J. J. Strachan '13, H. H. Hall '14, R. G. Lafean '19, J. W. Logan, Jr., '20, E. M. Barnes '23, H. W. Dexter '23, F. W. Waterman, Jr., '25, T. J. Eaton '26, J. P. Larkin '26, C. T. Barker '27, G. M. Hoffman '28, M. M. Kessler '28, B. M. Putich '28, D. P. Whittaker '28, B. M. Hutchins '32, H. L. Johnson '32, I. E. Madsen '33, W. J. Bates '35, S. C. Johnson '39, P. R. Toolin '39, D. van Dongen '41, M. W. Saxman '45, and J. L. Wandrisco '46. — WILLIAM J. BATES '35, *Secretary*, 141 Woodhaven Drive, Pittsburgh 16, Pa.

### *M.I.T. Club of the Connecticut Valley*

The Club held a dinner meeting on October 23 at the Captain Leonard House at Agawam, Mass., with a capacity group of 80 Alumni and wives. Among the guests

who attended were Professor Charles E. Locke '96, Alumni Secretary, and Ernest Crocker '14 of Arthur D. Little, Inc., who is our club representative on the Council.

The theme of the meeting was modern housing trends, and after one of the famous Captain Leonard House old-fashioned chicken dinners and a brief business meeting, an address was given by George H. Bork, prominent consulting engineer on heating and refrigeration, on "Modern Heating Trends." He was followed by Henry J. Kramer, Vice-president in charge of sales of Anchorage Housing, Inc., who spoke on "The History of Prefabricated Housing." The timely note in these two excellent talks received an accent from the contrast of the setting, an old Revolutionary War mansion in historic Agawam.

This was the first meeting of the year and the only ladies' night the Club will hold. The enthusiasm displayed promises a very active year to come. Officers for 1946-1947 were elected at the meeting on June 19, as follows: President, Donald Ross '27, Longmeadow, Mass.; Vice-president, Albert King '32, Northampton, Mass.; Treasurer, Irving Small '28, West Springfield, and Secretary, Minot R. Edwards '22, West Springfield. At an executive committee meeting held in the home of the newly elected President, Donald Ross, on September 13, the following temporary directors were appointed to serve until June, 1947, when new directors will be elected under the newly adopted club constitution: Theodore Lange '01, Springfield; Ralph Curtis '15, West Springfield; and Otto Kohler '31, South Hadley. A temporary executive committee to serve one year consists of Basil Constantine '26, Longmeadow, Laurence Stone '35, Springfield, and Willard Emery '21, Holyoke. The employment officers are Albert King and Willard Emery. — MINOT R. EDWARDS '22, *Secretary*, Holyoke Heater Corporation, 54 Waltham Avenue, Springfield 9, Mass.

### *Washington Society of the M.I.T.*

On October 12, Bill Mehaffey '17 was host to the Society at the David W. Taylor Model Basin, Carderock, Md. This naval laboratory, located in the suburbs of Washington, runs tests on aircraft and propellers as well as on the hulls of ships. It was pointed out during the greeting address by H. E. Saunders '16, that types of vessels other than naval ships are tested by the basin for prediction of the power required for propulsion.

Captain Saunders, the director of the basin, was introduced by Captain Mehaffey and, after welcoming the Tech men to the basin, literally threw open the doors of the entire establishment to the crowd. Naval officers on duty served as guides through the various testing facilities. The members saw wind tunnels in action while technicians explained some of the features of the apparatus. On exhibition, but not in operation, was a wind tunnel captured from Germany, which is used to predict the action of aircraft operating in the supersonic speed range. Traveling from the wind tunnel building to the water-borne part of the establishment, some noticed the threatening clouds and high wind which were later to make them scurry for shelter.

In the large building at Carderock the group rode up and down the towing tank on the carriage of the towcar, which was testing a destroyer hull for the demonstration. This tank is the largest of its kind in the world and is equipped with a turning basin at one end, where turning circles of vessels are predicted from the action of models turning in free route after release by the carriage.

In addition to the large tank there are several other water-filled tanks — one for high-speed work, another for deep-water investigations, which has windows in the sides at varying depths, and a pressure tank for testing ships' propellers. A dark booth associated with the pressure tunnel was rigged for viewing the action of a stroboscope to demonstrate cavitation of a rotating propeller. By means of the flashing light, the members could see the propeller appear to stand still while the cavitation phenomenon took place in a leisurely fashion before their eyes. The remainder of the trip consisted of inspection of drawing rooms, model shops, machine shops, materials testing labs, and other rooms housing auxiliary activities. At the height of the rainstorm, the tour ended, and everyone made a dash for the parking lot.

The following Tech men were present: 1893: P. H. Thomas; 1904: G. N. Wheat, F. W. Milliken; 1905: E. F. Kriegsman; 1907: J. P. Alvey; 1911: D. P. Gaillard; 1912: M. C. Mason; 1915: J. W. Conover; 1916: W. H. Blank, F. P. Upton; 1917: W. C. Mehaffey; 1921: Herbert Kaplan, Lawrence W. Conant; 1922: W. K. MacMahon; 1924: J. E. Jackson, R. P. Schreiber; 1926: S. J. Cole; 1928: A. E. Beitzell, G. D. Mock; 1929: J. A. Plugge, R. H. Smith; 1930: F. W. Turnbull, A. F. Bird, C. W. Maskell, J. A. Matthews; 1931: A. W. Day, J. R. Vincent; 1932: F. M. Moss; 1933: Bess Exton; 1937: B. M. Loring; 1939: G. T. Rado. — CHARLES W. MASKELL '30, *Secretary*, 4807 Bayard Boulevard, Washington 16, D.C. ALFRED F. BIRD '30, *Review Secretary*, 5070 Temple Hills Road, Southeast, Washington 20, D.C.

### *M.I.T. Women's Association*

The first meeting of the season was held in the Emma Rogers Room at the Institute on the evening of October 24, Mrs. Sage presiding. About 27 members sat down to the usual delicious supper, cozily served on card tables. The report of the recording secretary was read by Julia Sullivan '42. The date of the next meeting was announced as Friday, December 6, at 6.00 P.M., the speaker to be Henry B. Kane '24, Director of the Alumni Fund, who is sure to be enthralling on whatever subject; so don't miss it.

After the minimum of business was disposed of, George R. Harrison, Dean of Science at the Institute, provided a breathless hour trying to sketch briefly the scope of things now going on at Technology which prove that the departmentalization of science is breaking down and that several new laboratories are required in which to bridge these interdepartmental gaps. With graphic bits of vivid exposition and an actual chunk of uranium as Exhibit A, he ranged from the glorious supernylons not to be mentioned in print through the synthetic molecules of the chemists and the



atomic energy of the physicists to computing machines based on the decimal, duodecimal, and dual systems, and wound up with the servomechanisms of our own muscles, our logarithmic hearing, and the advice not to worry yet awhile over the absolute destruction of matter or the cancellation of positive and negative spirals of space! Some of us went home with heads splitting from the sheer strain of the stupendous. Everything was all right until he got to that dual system of numeration which the Arabs fortunately did not favor us with! If you weren't there, you are to be pitied, because it's very educational, not to say stimulating, to have your mind stretched until it hurts. — ADELAIDE A. TOOMBS '42, *Secretary*, 47 Alpine Street, Roxbury, Mass.

## CLASS NOTES

### 1885

Thomas Wilder Fry, born in Brooklyn, N.Y., on September 23, 1863, died at his home in Claremont, N.H., on August 31. He enrolled in Chicago, was graduated from Technology in our Class with an S.B., and was asked to remain as instructor but preferred to return to Chicago. He was with the Diamond Prospecting Company in Chicago until its merger with the Sullivan Machinery Company of Nashua, N.H., of which he became secretary. He served that company continuously for nearly 40 years until his retirement in 1930. He represented Claremont in the state legislature for two terms, 1909-1910 and 1919-1920, and during his second term was chairman of the education committee and a member of the appropriations committee. He was a member of the council of the National Foundrymen's Association, served as president of the University Club in 1913, as president of the Claremont board of trade and as a member of the Claremont board of health in 1914. In 1907 he was elected a trustee of the Claremont Savings Bank and later was its president for 10 years. As a student he was respected for his sterling qualities and much liked. After graduation he attended some of the early class reunions, but much to our regret we have seen nothing of him for many years. The writer had a pleasant call upon him and Mrs. Fry a few years ago and found him the same genial man as formerly. — ARTHUR K. HUNT, *Secretary*, Longwood Towers, Brookline 46, Mass.

### 1888

A card from Miss Marion Talbot, who was dean of women in the first faculty of the University of Chicago in 1893, reads as follows: "Because of health and distance, Boylston Street must remain a happy memory instead of a modern reality. I can recall the trains of cars bringing in gravel to fill up the Back Bay! Cordial greetings to B.R.T.C." Fred Ellis, our champion boxer, says that he has demonstrated the value of penicillin but cannot drive his car for two weeks and will have to give up any hard work. "No more climbing ladders" or "pick and shovel work," he specifies. "I am all right now but have to go slow." William Atkinson sends his permanent address, simply Boxford, Mass., no street or post office box number. Ivar Sjöström of

Andover says that his recollection of Alfred Hampton, with us in 1884-1885, is very vague, only that he had dark hair and was very good-looking. Charles L. Faunce, whose new address is 27 Church Street, Fairhaven, Mass., writes that he has been very busy all summer long, including several days' vacation at Nantucket and Menemsha on the Vineyard. He did not get into the briny deep but enjoyed several steamer voyages. Ralph Reynolds spent the summer at Brenton Point, three miles out of Newport, R.I. E. C. Means of Ashland, Ky., spent the summer in a cottage after the passing on June 12 of his wife, who had been with him for 53 years.

Walter Silsbee of 59 Magazine Street, Cambridge, says: "My pipes are slipping. (He had 102 a few years ago.) Two went bluey, and I haven't added any for several years. The only excitement around here is the hunt for something to eat, and it is scarcer than the fabled purple cow. I was glad to hear from you." John Runkle, son of the grand old professor, is still enjoying life with Mrs. Runkle at 1 Francis Street, Cambridge, Mass. Ralph Sweetland writes: "I had a summer with practically no great excitement. I have been in the office regularly when it opens, but go out early, at 2:00 P.M. [To play golf? B.R.T.C.] Mrs. Sweetland and I have been in Natick all summer except that for four days around the first of July we were at the Sunset Hill House, Sugar Hill, N.H., where we went regularly for 20 years in the fall. Our object in going at this time was to escape the noise of the fourth, but it turned out that there was no noise in my home town of Natick."

Eugene Daniell says: "I am hoping to be with you at next season's dinner of 1888 at Tech. I have a fine garden for a gardener more than 83 years of age." Arthur Conner gives his new address as Box 248, Exeter, N.H., and says that he made a trip to California in June to see his grandson and spent the rest of the summer in Exeter. Fred R. Nichols, now at 5639 Kenwood Avenue, Chicago, has joined forces with our old friend Lonsdale Green '87 and says that they make "a very happy family." Charles G. Merrell is at home at 305 Edgewater Drive, Dunedin, Fla., and keeps up his "bowling-on-the-green" as usual. Frank H. Adams, formerly treasurer of the Goodyear Tire and Rubber Company of Akron, Ohio, made a trip to Lincolnville, Maine, during September to visit an old friend. He says he fully intended to drive to Portland for a chat with the Secretary and to Woodstock, Vt., to call on a cousin whom he had not seen for 40 years, but that the only car he was able to secure had very poor tires. He was thus obliged to confine himself to short drives in the surrounding country to enjoy the gorgeous fall coloring, which would tempt him to spend every autumn in Maine if it were not so far from California. Adams stopped off for a week at his old home in Akron to see the few friends left, but says he would not care to live there any more because of the heavy traffic, the industrial unrest, and general congestion, all making life most unpleasant for the older residents.

Sanford Thompson, our class golf champion, writes regarding his recent golf doings as follows: "I was glad to receive your card and note the change of address. How

do you do it these days? My sole recent accomplishment has been an 18-hole tournament play on the Brae Burn long course (6,528 yards). It was between Army and Navy members of Brae Burn. I do not dare record my score, but I had a rattling good partner, so we halved our foursome match. My company is just completing the plans for the new terminal structures of the Logan International Airport at East Boston." Your Secretary returned to his new castle in Princeton (291 Nassau Street) on September 29 and has begun his football orgy by attending the Princeton-Harvard game on October 12, when he, with 35,000 others, witnessed the defeat of the Tigers by a single point, 13 to 12, in spite of all the strenuous "rooting" he and his friends could do. Too bad. His principal accomplishment during the summer at Chebeague Island was to swim from one of the beaches at the farm to a raft of logs, the last of the war obstructions. — BERTRAND R. T. COLLINS, *Secretary*, 291 Nassau Street, Princeton, N.J. SANFORD E. THOMPSON, *Assistant Secretary*, The Thompson and Lichtner Company, Inc., Park Square Building, Boston 15, Mass.

### 1890

Getting back to a postwar normal Alumni Day last June, Harry and Mrs. Goodwin, Burley, Crane, Sherman, and Packard met for the luncheon on the lawn, and Albert Brown joined us at the banquet at the Statler that evening. We must have had more life in us than was expected, for only one table was prepared for the four classes from 1889 to 1892, resulting in two '90 men being crowded out.

In a recent historical brochure put out by the State Street Trust Company of Boston, Batchelder is credited with having supplied valuable information. In the "Technology Book Shelf" for 1945-1946, we note that J. M. Howells has written on the architectural heritage of the Merrimack and Piscataqua Rivers. Ralph Joep reports that on his visit to Butte last summer Creden presided ably at a meeting of the Montana Alumni Association and seemed to be in good health and going strong.

The June, 1946, issue of the *Pastoral Staff*, the official magazine of the western diocese of Massachusetts of the Episcopalian Church, contains a fine tribute to Franklin Knight, in which, after reference to his intense zeal combined with tolerance in judgment of others, his early technical training is suggested as perhaps having given "extra breadth and soundness to his teachings." From a testimonial presented by other Protestant ministers after he had resigned from his 25-year Holyoke pastorate, the following is quoted: "You have ministered not only to your beloved St. Paul's, but you have served the entire community. You are the type of pastor we could all wish to be. In fact one still hears people outside the Parish and of other faiths, say, in expressing admiration for some one, 'He is like your Mr. Knight.'"

Among the contributions listed in the Sixth Annual Report of the Alumni Fund is one of \$1,195 by Minnie H. Rogers of our Class, who died in 1944. The Hayden Foundation has granted \$2,200,000 toward the cost of the new library building, of which \$1,200,000 is already paid in. Many years ago Charlie gave \$80,000; one-

third of the cost of the mining addition, to which Pierre du Pont also contributed one-third. Then, in 1925, he gave \$43,000 to the educational plant and, in 1927, \$100,000 toward the new dormitories, one of which bears his name. Those who were present at our reunion in Belmont will remember the part he played in raising the large scholarship loan fund, and to this, in his will, he added the \$100,000 memorial fund, so that except for Mr. Eastman he now appears as the largest donor to M.I.T.

Martin O. Southworth has changed his address to 7861 South Shore Drive, Chicago 49, Ill. — GEORGE A. PACKARD, *Secretary*, 50 Congress Street, Boston 9, Mass. HARRY M. GOODWIN, *Assistant Secretary*, Room 3-233, M.I.T., Cambridge 39, Mass.

## 1892

The Secretary has recently received the sad news of the death of Allen French on October 6, after a long illness at his home in Concord. He entered the Institute in 1888 after receiving his early education in the Boston public schools. His choice of course at the Institute was IX, then known as the General Course, from which he was graduated in 1892 with the bachelor of science degree. Immediately after graduation he attended the University of Berlin for a year and, coming back to Harvard, further pursued his studies in English and history and received there the A.B. degree in 1894. He held an instructorship in English at Harvard from 1908 to 1913 and again in 1919-1920. He was the author of some 24 books. He was with us at a number of our class reunions and alumni banquets, the last being our 50th in 1942 and the Alumni Banquet in 1945.

The following excerpts, quoted from two of his home town papers, give a brief account of his life and show the high esteem in which Allen French was held by us all. From the Concord *Enterprise* of October 10: "Death took a second well-known citizen . . . when Allen French, 75, noted historian and author, died at his home, Nashawtuc Road, after a long illness. A native of Boston, where he was born on November 28, 1870, he lived in Concord since 1912. . . . In his book on Ticonderoga, access to British manuscripts allowed him to prove that Benedict Arnold was equal in command with General Ethan Allen on that expedition and that the famous remark, 'Open in the name of Jehovah and the Continental Congress,' attributed to Allen, was not in fact spoken. Another controversy in his long career was figured between the then Governor James M. Curley of Massachusetts and Congressman Sol Bloom of New York. Mr. French backed Bloom in his statement that the 'shot heard around the world' was actually fired at Lexington Green and not Concord, as was claimed by Governor Curley.

"Mr. French was president of the Concord Antiquarian Society for which he did so much; was a charter member and former officer in the National Thoreau Society; member of the First Parish Unitarian Church; the Layman's League of the church; the Social Circle Club of Concord; Massachusetts Historical Society; Colonial Society, and the Harvard Club of Boston. He was a member of the Concord Library Committee at the time of his death and had been for several years. He was also a mem-

ber of several other town committees and had a wide reputation as a speaker on historical background. Mr. French was a distant relative of Daniel Chester French, who modeled the present statue of the Concord Minute-Man at the Old North Bridge."

And from the Concord *Journal* of October 10: "Allen French, author and historian, died on Sunday, October 6, at his home on Nashawtuc Road. He was born in Boston, November 28, 1870, the son of John James and Frances Maria (Stratton) French. He studied at . . . Technology, receiving the degree of S.B. in 1892, studied at the University of Berlin in 1892-93 and took his A.B. degree at Harvard in 1894. He married Ellen Richmond Dorrance of Providence in 1898. She died in 1918, leaving three daughters, Miss Maude Dorrance French of Hanover, N.H., Miss Frances Stratton French of New York and Ellen, now Mrs. Evan R. Spalt of Plainfield, N.J. Mr. French married in 1922 Aletta A. Lillibridge in Petersham, who survives him. He also leaves two grandchildren, Katherine and Allen Evan Spalt. . . .

"He was a prolific author; his first great success was a book for boys, *The Junior Cup*, published in 1901. *The Colonials*, a novel published in 1902, was widely read, and the painstaking care given by the author to the historical background led to the publication of several scholarly histories dealing with the Revolutionary period: *The Siege of Boston*, 1911; *The Day of Concord and Lexington*, 1925; *A British Fusilier in Revolutionary Boston*, 1926; *The Taking of Ticonderoga*, 1928; *General Gage's Informers*, 1932; and *The First Year of the Revolution*. He was at work, before the war interrupted his research, on a study of the causes of the great migration to the new world in the seventeenth century.

"Mr. French had lived in Concord for forty years and was closely identified with the life of the town. He became a member of the Library Committee in 1909 and served as its chairman continuously since 1921. He became a member of the Social Circle in 1919. He was an active member of the Antiquarian Society, serving as president for many years, including the active days when the new building was built and furnished, and his impeccable taste helped to make it the unique combination of beauty and historical accuracy which it became. His collaboration in the re-enactment of the Concord Fight made that a feature of the celebration of the sesquicentennial in 1925. In 1935 for the celebration of the three hundredth anniversary of the founding of the town, he wrote the *Drama of Concord*, which made a deep impression on all who saw it or took part in it. He also served the town on special committees and was a forceful speaker at town meetings.

"He was a charter member and former vice-president of the National Thoreau Society, a member of the Harvard Club of Boston, the Colonial Society of Massachusetts, and the Massachusetts Historical Society. He was a member of the First Parish and was deacon and historian of the Church. He was a former Superintendent of the Sunday School."

The *Journal* appends an appreciation by T. Morris Longstreth, as follows: "One went away from Allen French feeling a

lift, feeling that the day was somehow pleasanter. You felt assured that the old-fashioned virtues of the gentleman still persisted upon earth without being old-fashioned at all. And this was very comforting.

"My first impression of the man who was to become my friend lingers vividly. It was a trim lean white-goateed individual, elderly by the calendar but very alive, bringing scholarship and precision to a Sunday evening Thoreau reading. I knew at once that I wanted to know this man. I made some approach and remember the quick lighting-up of his eyes and face, the complete attention, the sympathetic smile, the innate courtesy which still did not blunt the edge of his perception.

"The five years of companionship given me since that evening have revised nothing of that impression, so genuine was every trait. I quote the experience because I came to find it was the customary one: the instant interest, the sincerity of response, the expectancy of good. Allen French knew the world, and it neither spoiled his delight in it nor tarnished him with cynicism. His mind kept as clear as a spring, as ever fresh, and as pure. He was one of the few men I have known who would be as willing for another to discern his thought as to look into his face.

"It followed naturally that hospitality should be his delight, the very atmosphere of his home. His perfect day ended in a dinner-party and the hospitality of the mind. He gave his interest gladly. To go to that white house at the foot of Nashawtuc Hill with a problem, civic, literary, historical, or miscellaneous, was to have it considered and usually solved. None was turned away with impatience or scanted attention. Nor were such pilgrims only his friends. People who had read *How To Grow Vegetables* wanted to see the gardens. Tourists who had bought *Historic Concord* must have an autograph. Boys who brought the papers stayed to discuss *The Red Keep*. Scholars engaged in serious research, editors of encyclopedias wanting articles on The Revolution from this authority, antiquarians with something to sell, and even a few plain cranks, found the way to the broad door and the sunny study.

"He would agree, I believe, if I say that he entertained fact rather than fancies, for fact led to the truths behind. He was a born source-seeker and prospector for original documents. He must know exactly, and to unearth some historical substantiation in an English cellar gave him as much joy as a gold-hunter finding the mother lode. It was hard for him to sit through a meal without our talk driving him to the encyclopedia. Yet there was no pedantry in all this, but rather a sense of adventure, the same romantic sense that led him to write his boys' books. History was for him a living glory.

"That his work was honest goes without saying. Allen French could not have falsified his writing for the sake of popularity any more than he could have become a counterfeiter. Yet I have never met a less self-righteous author. He was as unable to pontificate as to talk Chinese. The code of the gentleman encompasses both pride and modesty. Allen French's modesty was almost impregnable. He neither lectured one nor indulged in any other of the tempta-



tions of authority. This did not seem strange when you were with him, but looking back, how rare!

"Given interest and ability, a Concordian soon finds himself launched in public services; at least if he is as approachable as Allen French. The duties were incessant. They are tabulated in another column, those that could not help being divulged. The others, the quiet contributions of time, money, strength, would constitute a respectable life for those with less tender consciences. I often wished that this historian's conscience had some callous spots so that all his forces could be directed to the finishing of the second huge work he was concerned with when overtaken. But current humanity came first. He was outraged by the Nazi threat to all civilized living. He put in his hours at Report Center and his Victory garden quite aware that, after seventy, if you burn your candle at both ends, it won't burn long.

"The greatness of Allen French was already verifiable, however. *The First Year of the American Revolution* stood on the shelves. This definitive masterpiece assures its author of a name in living American literature while the nation lasts. With its publication, as I once wrote without being contradicted, Allen French took his place in the Concord Succession. To so loyal a Concordian what reward could be more befitting." — CHARLES E. FULLER, *Secretary*, Box 144, Wellesley 81, Mass.

#### 1894

Once more it is the Secretary's sad duty to report the death of a classmate who has had a distinguished and useful life. Through the kindness of W. C. Furer '06 of Honolulu and of our Alumni Secretary, C. E. Locke '96, the Secretary has received information of the death on October 8 of Harry A. Baldwin at the Paia hospital, Maui, Hawaiian Islands, following a long illness. Born in the islands and a lifelong resident there except for the time spent in his student days at Technology and a period as territorial delegate in Congress, Baldwin was a man whose life was devoted to service of the people and the commercial interests of the islands, as shown by the clippings from the Honolulu *Star-Bulletin*, which present a brief story of his career.

"Mr. Baldwin, a member of one of Hawaii's best known and best loved families, died at the Paia hospital. . . . He had been in the hospital for several days after recurrence of a long illness which forced his recent retirement as manager of the Maui Agricultural Co. Mr. Baldwin was born January 2, 1871, at Paliuli, Maui. He was the son of Henry Perrine and Emily (Alexander) Baldwin, and the grandson of Dwight Baldwin and William P. Alexander, New England missionaries to the islands.

"The Maui leader was educated in San Francisco schools and Oahu college before matriculating at . . . Technology. He returned to the Valley Isle in 1895 where he began work as a timekeeper for Haiku Sugar Co. He became manager of the Maui Agricultural Co. in 1904 and was elected its president in 1912, a position which he held until March of this year. He was also president of the Haleakala Ranch Co., a vice president of Alexander and Baldwin, and a director of the Bishop National Bank

and the Bishop Trust Co. In following in the footsteps of his father, one of the original partners of Alexander & Baldwin, he was responsible for the construction of the Bishop St. structure that now houses that firm. He became actively interested in politics in 1912. He was elected to the territorial senate for the 1913, 1915, 1917, 1919, and 1921 sessions. He was chosen to serve out the unexpired term of Prince J. Kuhio Kalaniana'ole when the delegate to congress died in 1922. He refused renomination for a full term to the position. He was re-elected to the territorial senate in 1934.

"The Baldwin family had long been recognized as one of the leaders in polo in the islands. Three of Harry Baldwin's ponies, Paloma, Topsy and Goldwing, were entered in mainland matches. Cattle bred on his ranches were also recognized as prize winners. In one California state fair, he won 21 first prizes, four championships, three grand championships and 11 second prizes.

"Harry Baldwin was one of the earliest and firmest proponents for statehood for Hawaii. In October, 1935, in a statement at a congressional hearing on statehood held in Wailuku, Mr. Baldwin said: 'My father, H. P. Baldwin, a member of the senate, and my father in law, W. O. Smith, attorney general of the Republic of Hawaii, were both active in the annexation movement 40 years ago. At that time there was considerable discussion as to whether Hawaii should apply for admission as a full fledged state or as a territory. I feel that we have fully demonstrated our loyalty and ability to govern ourselves both as a territory and as a state.' Surviving him are the widow, Ethel Frances Smith Baldwin, and one daughter, Mrs. J. Walter Cameron."

The esteem in which he was held in Hawaii is further shown in the following editorial in the same newspaper on the evening of his death: "Harry A. Baldwin's death removes a man who linked 'old Hawaii' — the Hawaii of the industrial pioneers — with the new life of a young territory of the United States. His father was one of the islands' great industrial builders and benevolent community leaders. The sons of Henry Perrine Baldwin and Emily Alexander Baldwin have carried on that tradition which is in the life of many of Hawaii's families. Harry Baldwin combined business acumen and energy with a feeling of political responsibility. It was because of that feeling that he served in the territorial senate, and later took a post he personally did not want — that of delegate to congress. He served his territory at Washington conscientiously and well, but he was always happier on the island of his birth, and in the loved company of his family, friends of all races and degree, and the waving fields of sugar cane which the genius and vision and unflagging energy of the Baldwin family developed from arid hills or weed-grown plains. He was a man who through a long, active life played a modest but constructive part; and whose innumerable, unostentatious services to his community and the territory made him loved and trusted wherever he was known."

Mr. Furer adds that his death, no doubt, was hastened by the worry over the local sugar strike (in its 40th day on October

10), in which every plantation of the territory was involved, in which the loss in sugar production was already over 100,000 tons (about one tenth of the annual output), and in which labor had already lost over \$4,000,000. All of us who knew Baldwin at all in those days of 50-odd years ago will feel sorrow at his passing, and deep sympathy for his family.

In company with Charlie Locke '96, the Secretary recently had the privilege of calling on Ferdinand Schiertz and his wife, who for several years past have been living in an attractively situated and clublike home for elderly people at 2055 Columbus Avenue, Roxbury. Here, with the facilities of a hotel, they find congenial life without the difficulties incident to maintenance of a private house in these difficult days for housekeepers. Schiertz has had a long and busy professional career as a mining engineer, spending many years in China, Mexico, and various parts of the United States. With advancing age it was desirable to retire from professional work. It is a pleasure to report that both he and his wife seem as well as when they added so much to the enjoyment of our famous 50th reunion at Swampscott, and as interested in old friends and classmates.

A recent letter from Mrs. Horatio Parker reports the disturbing news that Horatio has suffered a severe shock which confines him to his bed and necessitates careful nursing. With the devoted care of his wife and their elder daughter and a good practical nurse, it is hoped that his recovery may be as speedy as possible. Another daughter and a son are in college.

The November Review forestalled the Secretary in mentioning a new book by Charles Abbot entitled *The Earth and the Stars*. No one is better fitted by study and research experience to write on this subject, and it will perhaps be recalled that many years ago he wrote a book on *The Sun*. Perhaps the next one will be devoted to the moon, so as to make the trilogy complete. Although Abbot's retirement as secretary of the Smithsonian Institution at Washington took place some four years ago, he seems to maintain his activities in research and scholarly work as a research associate in his old haunts. Retirement with him has undoubtedly meant freedom to do the things he has long hoped to accomplish.

Speaking of books written, the Secretary has had the pleasure of seeing appear the sixth edition of the work on *Water Bacteriology* originally written by C.-E. A. Winslow '98 and himself, and now completely and most skillfully revised by M. H. McCrady '09, whose name is added as one of the authors. — SAMUEL C. PRESCOTT, *Secretary*, Room 3-233, M.I.T., Cambridge 39, Mass.

#### 1895

One by one! We learn from the St. Paul, Minn., *Dispatch* that Henry Yoerg passed on September 4. Henry was born in 1872, and was a member of one of St. Paul's pioneer families. His mother came to St. Paul in 1849 on the steamboat which brought the future governor, Alexander Ramsey, to Minnesota. Henry was born on the west side of St. Paul and lived at 818 Summit Avenue. At the time of his death he was a vice-president of the St. Paul Foundry and Manufacturing Company.

Before his retirement in 1942, he was general superintendent of motive power and equipment for the Great Northern Railway. Inclined in his youth toward mechanics, Yoerg enrolled with our Class and was graduated as an honor student. He began his 45-year career with the Great Northern in 1897, working first as a draftsman in St. Paul. In 1902 he became superintendent of shops in Havre, Mont., returning to St. Paul a year later to become superintendent of the company's locomotive and car repair shops. He was assistant superintendent of motive power in 1917 and superintendent in 1920. He retired from active duty on July 1, 1942. He is survived by Mrs. Yoerg and a brother, Louis, of St. Paul. Henry had a brother, Frank, who preceded him at the Institute in the Class of 1892.

Yoerg and Yoder were almost twins at Technology. They had the same first initial of their name; they were born the same year and carried on through classes in the same division; they were graduated from the same course—Mechanical Engineering, joined the same fraternity—Delta Upsilon, roomed together for three years, were both descended from German ancestry, liked the same things at school; and now, Henry will be missed by Yoder and many others.

S. Lawrence Bigelow has resigned from his work and moved from New York City to 39 Highland Street, West Hartford, Conn. Alfred L. Simmons has moved from Abington, Mass., to Cedar Road, Eliot, Maine. — LUTHER K. YODER, *Secretary*, 69 Pleasant Street, Ayer, Mass.

### 1896

Because of the large volume of notes for the November issue, a lot of material available at that time had to be held over to this issue.

The Brockton, Mass., daily *Enterprise* pointed with pride to the fact that Brockton's two oldest living graduates of Technology, Frank A. Howard and Myron L. Fuller, attended our 50-year reunion. Myron Pierce still is going a little slow after his operation in March, but he says it is a pleasure to be able to eat any sort of food without being fearful of the results. Melluish has a new job with the division of sanitation of the state department of health, in Albany, N.Y. The prosecution of Walter Stearns by the United States Department of Justice for alleged criminal acts has proceeded to the point where Walter anticipates that his trial will begin before the year is over. None of us can picture Walter as belonging in the criminal class.

Lythgoe retired on June 1, and his mail no longer goes to the State House but to his home at 36 Fair Oaks Avenue, Newtonville 60, Mass. The Vitamin A paper by Boyce, Filios, and Lythgoe, which he read on June 4 at the Atlanta meeting of the Association of Food and Drug Officials of the United States, reported that in a period of three months from the date of manufacture there is an average loss of 15 per cent of the Vitamin A content of reinforced oleomargarine when stored under the most favorable conditions. Assuming that from the manufacturer's point of view there is good and sufficient reason for dating each package, each package should be labeled, the authors contend, with the actual date

of manufacture and not labeled in code. The label should bear a statement that the product is perishable and should be kept under refrigeration. Such statements, they consider, would be of value to both the vendor and the consumer and should be the practice of all manufacturers of reinforced oleomargarine. Lythgoe's paper on "The Intestinal Bomb," which he read at the same conference, dealt with the pernicious substitution of mineral oil for edible oil and gave examples of such substitution for olive oil, its use by restaurateurs in salads, and its use in one instance in bread to the extent of 40 per cent of the total shortening. Methods of analysis, as well as the character of legal procedure in some instances, were also given. Both these papers will appear in print in the *Quarterly Bulletin* of the Association. Lythgoe's last official act before retirement was to order the prosecution of the baker who had shipped into Massachusetts the bread containing the 40 per cent substitution. Subsequent appearance of the bakery corporation in the district court at Irving resulted in a plea of *nolo* and payment of a fine of \$100. The surprising thing was that they gave the State Food and Drug Division a vote of thanks for having made the discovery which resulted in financial advantage to the company. Lythgoe has also supplied the Secretary with a reprint of his paper, "Sanitation—Your Invisible Ingredient," from *American Carbonator and Bottler*, which he read before the Eastern Soda Water Bottlers' Association in Boston on January 23. His retirement was signaled by feature stories in Boston daily and Sunday papers. One writer quoted the "State's food detective for 49 years" as saying, "First, I'm going to clean my attic, and then I'll just wait and see what happens after that." It may be that he will now have more time to devote to his hobbies of photography and violin playing, both lines in which he already ranks as an expert.

After Paul Litchfield had returned from our reunion, he became the recipient on Commencement Day, June 14, of the honorary doctor of science degree from the University of Akron. He had retired from the University's board of directors in January, after 30 years of service. In his commencement address on June 14, he stressed that no longer can the United States or any other nation live in isolation from its neighbors and that the hope of the world lies in making the United Nations a success as an instrument of permanent peace. Later on, early in August, Paul took three of his company's executives in his Lockheed plane on a trip of 11,000 miles to Alaska, visiting Whitehorse, Dawson, and the Klondike, in the Yukon Territory, and six of the principal cities of Alaska. He went through the University of Alaska, visited our large military air base at Fairbanks, did a little salmon fishing in the Bering Sea and in southeastern Alaska, and spent a week end at Mount McKinley National Park; he also visited military establishments, gold mining operations, fish canneries, and road construction operations. He recommends Alaska as a wonderful place for a summer trip, now that one can go so quickly by air. The Secretary has received a copy of Paul's latest book entitled *The Industrial Republic—Reflections*

of an Industrial Engineer, which, like everything emanating from him, presents sound ideas full of food for thought.

Word from Wayne was that after the reunion he had had a leisurely return to Indianapolis in his car via Springfield, the Berkshires, Poughkeepsie, New York City, Paterson, N.J., Bethlehem, Harrisburg, and Washington, Pa. He had had a visit with Billy Andrew in Cincinnati, and Billy explained how certain circumstances had prevented him from attending the reunion. On the day following Wayne's visit, Billy suffered a heart attack and was rushed to the hospital, where he was scheduled to stay for some time to get a complete rest. At the annual May dinner of the iron and steel division of the American Institute of Mining and Metallurgical Engineers, Bradley Stoughton was the principal speaker, his subject being "Industrial Germany." H. Hilliard Smith reports that his health has been none too good of late, and being in his 75th year of age, he is retiring from the profession of architecture in Hartford, Conn.

On the day following Alumni Day, Rockwell, with Mrs. Rockwell, went on a fishing trip to Moosehead. The results were later reported as good and were understood to have been better than those from Rockwell's trip with Fred Damon somewhat earlier. During the first week of October, John and his wife made a motor trip to Norwich, Conn., and the Berkshires, where at the Williamstown Inn they were fortunate in finding Bill and Mrs. Dorrance. Bill was recuperating after a summer illness, but was going back to his job to continue until his time for retirement, which is now not far off.

Joe Clary made a call on the Secretary on July 12. He was on a trip north with Mrs. Clary to visit his sister in Roxbury and tour New England and then go back to North Carolina in August to spend the rest of the summer before returning to his home in St. Petersburg for the winter. He explained the complications which had prevented him from scheduling his trip north a month earlier so as to attend the reunion. Con Young got busy after the reunion on the job of reforestation around his estate at Bass River, Cape Cod, on repairing his water pump and sundog, and on various other chores. Rutherford sent a letter from the Fiji Islands en route and followed it by two letters from Sydney. He reported a fast, smooth, and uneventful voyage of 16 and one-half days from San Francisco to Sydney, where he had the joy of meeting his brother, his sister-in-law, and an assortment of nephews, nieces, grand-nephews, and grandnieces, none of whom he had seen for many years. He and his brother and sister are now the only three survivors of the family of 11 children. The sister lives in Switzerland. The housing situation is apparently as bad in Sydney as in the United States, and it was only by a stroke of good luck that he finally secured board and room with a private family. His address is 21 Miles Street, Mascot, Sydney, New South Wales.

At the 56th annual two-day congress of the Sons of the American Revolution held at Trenton, N.J., in May, Charlie Tucker was elected genealogist-general of the national society. He is state registrar for the organization in Massachusetts and a promi-



nent member of the General Joseph Frye Chapter. Ralph Henry secured considerable publicity in the Boston papers in the latter part of June by his proposal for an eight-lane auto, train, and shuttle tunnel to run between the North and South stations and continue to a new market district to be established in South Boston. Ruckgaber, whose attendance at the reunion was prevented by ill health, is now located at 52 Smith Terrace, Stapleton 4, Long Island, N.Y. A post card from Pauly in July reported that he had just finished a motor trip of five beautiful days in Yellowstone Park and was then headed for the Tetons and then back east via Salt Lake City. It was his fourth visit to the Yellowstone. The Toziers, after flitting around the country for several months, finally lit, the last of May, back in their old stamping ground of Rochester, N.Y., where they expected to stay put for the winter. With the job of getting settled, they could not see their way clear to come to the reunion. They are now located at 265 Culver Road in Rochester. During June and July they were around Boston. Mrs. Tozier made her headquarters at the Kenmore Hotel while Tozier himself was in the Baker Clinic at Deaconess Hospital. In September he reported that he was well along in his convalescence and was feeling fine.

William E. Barbour, Jr., '33, a former major, has been receiving publicity in the Boston papers as head of a new Boston concern, Tracerlab, Inc., which makes instruments and deals in many other constructive uses of radiations like those which the atomic bomb used for destruction. This item is of interest to us because he is the son of our classmate.

On May 4 a testimonial dinner was given to John Tilley at the President Tavern in New York City by a group of building industry executives who have been connected with construction projects on which Mr. Tilley has had charge of the engineering work. This signalized the rounding out of John's 35 years of service as chief engineer of Marc Eidlitz and Son and Vermilya-Brown Company. As a token of affection and esteem the group presented him with a gold watch and chain.

The last word from Bakenhus was that he was spending every week end with Mrs. Bakenhus at the hospital in Poughkeepsie. She is now out of any immediate danger and making slow progress in her recovery. Reuben also sent the Secretary a card from Father Partridge, written the last of August, saying that he had been ill since February, so that he had had to give up his proposed trip and had not progressed farther south than Philadelphia. He had been at St. Luke's Hospital in New York City for several weeks suffering from a complication of diseases, but at the time he wrote the hospital expected to send him to its convalescent home in Connecticut to get his strength back so that he would be able to make his trip south when winter came.

Dr. Coolidge, who had been put on the General Electric retired list, although we can hardly conceive of him as being in retirement, was carried on the rolls as consultant to the General Electric research laboratory. However, the latest move by his company has been to appoint him head of the new laboratory at the government-

owned atomic energy plant at Hanford, Wash. The General Electric Company took over operation of the Hanford Engineering Works on September 1, and Dr. Coolidge has been associated with the atomic bomb project since 1941, when he was appointed a member of the six-man reviewing committee, whose report was instrumental in the decision to proceed with the program on a large scale.

The Secretary was pleased to have Billy Anderson drop in for a call on October 2. His presence in Boston was due to the arrival of a granddaughter. Anderson's son is William G. Anderson of the Class of 1941. September 30 signaled the presence of Arthur Baldwin in Boston, and your two secretaries had lunch with him at the Parker House. He was here for the wedding of his son, Edward Arthur Baldwin, Jr., '30, to Josslyn Ames Kelly, which was observed on October 5.

The American Society of Civil Engineers has issued Memoir No. 1618 on the late Eugene C. Hultman, which gives the highlights of his career and extols his many fine traits. George F. Ashton of Salem, Mass., died on August 2, while vacationing in Lewiston, Me. He was born on February 29, 1872, was graduated with us in Mechanical Engineering, and had resided thereafter in Salem. He was former city engineer and retired clerk and treasurer of the Essex South District Sewerage Commission. While connected with the latter, he had supervised the installation of the combined municipal sewerage system in Peabody, Danvers, Beverly, and Salem. Miss Rose Dexter passed away on September 17. She had been prominent in various women's organizations in Boston. She took a special course at M.I.T., and thus became listed with our Class, but she never had shown any class interest.

Classmates, especially those who have attended our reunions, will be shocked to learn that Henry D. Jackson passed away at his home in Concord, N.H., on October 12. Actually, Henry chose the Class of 1895 as the class with which he affiliated at M.I.T., but he came regularly to our reunions and also had the rather unique distinction that he was more or less an active participant in the affairs of the three separate classes of 1895, 1896, and 1897. He indicated his loyalty to these classes by contributing class dues to all three. He had not been in the best of health for a year or two, having had a previous heart attack, but he had kept active. His death was due to another heart attack, which had occurred two days before. We shall sorely miss Henry. — CHARLES E. LOCKE, *Secretary*, Room 8-109, M.I.T., Cambridge 39, Mass. JOHN A. ROCKWELL, *Assistant Secretary*, 24 Garden Street, Cambridge 38, Mass.

#### 1898

It is interesting to learn how many classmates have been hiding their light under a bushel. Clarence Goldsmith, 222 West Adams Street, Chicago, Ill. writes, "When the August 15 letter to the members of '98 reached my desk, I was pleased to turn it over and read your note on the reverse side, and before any 'grass grows under my feet,' I will attempt to furnish you the items which you wish. The following is a brief outline of my activities with the War Department during our preliminary prepara-

tions and the prosecution of World War II." Then follows a list of services performed during the period from 1940 to 1945 as a representative of the National Board of Fire Underwriters, which was under voluntary contract with the War Department to furnish engineering services to all arms and branches of the service without compensation. The list ranges all over the map from the item, "1940-1941, advisory fire protection engineer, construction division, Quartermaster General, General Hartman" to "March, 1945-August, 1945, United States Strategic Bombing Survey, European Theater of Operations; consultant, Secretary of War, Franklin D'Olier, chairman."

Goldsmith continues: "Two of the assignments are worthy of comment: In April, 1944, I made a 30-day trip, mostly by air, through the Northwest Service Command's territory, visiting Prince Rupert, Whitehorse, and Canol. A rather detailed survey of the Canol oil project and the Alaska highway was made, and a report was submitted to the commanding general of the Northwest Service Command. In February, 1945, I was assigned to the oil, rubber, and chemical section of the United States Strategic Bombing Survey and arrived in London on March 5 by plane from Washington. The ensuing six months were spent in investigating and preparing reports on the damage inflicted by aerial bombing attacks on cities and plants in Germany and also in the Polesti oil fields in Romania. I spent considerable time in Essen and Hanover and visited Arnheim and Hamburg. This assignment involved about 50,000 miles of travel, mostly by air. I was a colonel, field grade (assimilated), and, as a matter of fact, was the oldest Army officer in the European Theater of Operations. I stood the gaff pretty well and returned in the *Queen Elizabeth*, having a very quiet but interesting voyage. I am back at my desk at 222 West Adams Street, Chicago.

"To supplement the foregoing, I am enclosing one of the National Board's publications, entitled 'Fires That Never Happened,' which may perhaps give you additional details of my operations." The publication enclosed is a 50-page, illustrated pamphlet, and if anyone wishes to have their eyes opened as to a form of service that contributed materially to the winning of the war, write to the National Board of Fire Underwriters, 85 John Street, New York 7, N.Y., and ask for a copy of "Fires That Never Happened." The pamphlet is dedicated "To the men of the boards, bureaus, and companies of the fire insurance business whose anonymous, unspectacular work safeguarded army installations, naval shore establishments, water-front properties, war industries, and the life lines of the armed forces of the United States and Allies at war." Secretary Stimson writes: "The outstanding service of the insurance business through the National Board of Fire Underwriters to the War Department is of value beyond measure." Our distinguished, but modest, classmate is frequently mentioned in the publication from the very initiation of the service on September 25, 1940, when "five civilian fire insurance engineers . . . pulled chairs up around a small oak table in the War Department and went to work with W. W. Dean, head of the fire protec-

tion department, on plans to help win the global war. One of them was . . . Clarence Goldsmith. . . .

There is a full-length picture of Colonel Goldsmith, looking very fit in Army uniform, above the caption, "Goldsmith, 110,242 miles." Says the text: "During nearly five years of service in the preparedness and war efforts, Engineer Goldsmith travelled 110,242 miles. . . . Nearly 25,000 miles were by Army conveyances — with 15,575 miles holding on to a jeep. Soldiers will hail that jeep record as a herculean feat." The following excerpt is part of a citation by Army Service Forces, Chemical Warfare Service, on Clarence Goldsmith: "His diligence and judgment have been an inspiration to the younger officers and civilians, while his complete appreciation of the complex factors surrounding the initiation of fires and conflagrations has complemented the technical information supplied by the scientific staff." Congratulations, Clarence, and thanks for your letter and great service during the war.

Another classmate who tries to keep his light under a bushel (but it just won't keep), is Lester Gardner. I recently spent a delightful evening with him as his guest at the University Club in New York. Among other things, we discussed tentative plans for the 50th. Lester, as is widely known, has been an important factor in the development of the aeronautical sciences. He has recently resigned as chairman of the board of the Institute of Aeronautical Sciences, "for a rest." He is enjoying his rest by taking trips with his wife, Margaret, and he is also organizing the Center for Advanced Aeronautical Study, which is sponsored by Columbia University, M.I.T., and the Institute of Aeronautical Sciences (I.A.S., for short). About a year ago the I.A.S. purchased a spacious Fifth Avenue mansion for its New York headquarters. An illustrated booklet entitled, "The Institute of Aeronautical Sciences and Aeronautical Library and Museum, Fifth Avenue and 64th Street, New York City," describes the growth of the I.A.S. and the new building. As it has been prepared for distribution, a copy may be secured by writing to the I.A.S. All through the booklet are evidences of the indefatigable spirit and lofty discernment of our distinguished classmate. (Lester told me not to write anything about him in the class notes, but that would not be fair, would it?)

Howard L. Bodwell, 7501 Olivetas Avenue, La Jolla, Calif., writes as follows: "I was very glad to receive your letter of August 15 and learn that you have consented to carry on as secretary for the Class. I hope that you will keep the job permanently, as I know that it will then be done exceptionally well. Arthur Blanchard certainly merits the thanks of us all for attending efficiently, through all these years, to a task involving much labor and time. It is most important to the interest of the classes as well as to the Institute in general that this office be filled by a capable and conscientious man, and I think our Class has been fortunate in this respect. As to my work during the war — as you may know, I retired from the steel business in 1941, as I thought and really hoped, permanently, and we were spending the winter here in La Jolla when Pearl Harbor happened. We returned to Pittsburgh shortly after that,

and I went to work again, 'for the duration.' On March 1 of this year I retired again, permanently this time, I hope, and three days later left in my car for this place, which we had liked so well when we were here before. March 1 was my 70th birthday, and I thought it about time to quit, after 45 years in the steel business. I am enjoying perfect health, as is Mrs. Bodwell, and we anticipate many years of pleasure and happiness in this garden spot of the Pacific Coast. I am already looking forward to the 50th reunion, when I expect to see many of my old friends of '98, whom I remember as though I had seen them yesterday. I hope they will all be there, and be sure to tell them to bring along their golf clubs. We shall have a grand time." We will be waiting for you, Howard, on the first tee, and thanks for the news.

F. A. Jones, 286 Chestnut Hill Avenue, Brighton, Mass., writes as follows: "I have no news of particular interest to offer, yet realize you should have co-operation to keep the class notes going. I am busy with my work, which I enjoy, and so have elected not to retire, for a while anyway. My health is excellent, for which, of course, anyone would be thankful. Looking back through the years since graduation, it does not seem that over 48 years have passed. It is pleasant to reminisce occasionally, but I suppose it is more important to look ahead, for, after all, the future is before us with problems to face and enjoy." Thanks, F. A., for the news and the philosophy.

We acknowledge the receipt of letters from Charlie Hurter, Jack Bleecker, and William Brewster. Charlie has traveled pretty nearly all over the world; our Class Day prophet is traveling all over Pennsylvania; and Will Brewster has built highways all over West Virginia. More about these letters in later issues of *The Review*.

Charles H. Godbold has moved from Washington, D.C., to 200 Fernmore Street, San Fernando, Calif. How about a letter, Charles, describing your work in Washington, the attractive scenery around Cabin John and along the Chesapeake and Ohio Canal, and your new home and activities? And all you '98 boys and girls, keep the flow of letters at flood level! — EDWARD S. CHAPIN, *Secretary*, 114 Federal Street, Boston 10, Mass.

#### 1899

In previous class notes I recorded the death of William Kingman, V, of Framingham, Mass., but was unable to give many details relating to his passing or to record facts regarding his work. Now, through the good offices of Miles Sherrill, who, with his wife, kept up a close friendship with Bill and his wife Grace, these omissions can be supplied. Bill's first job on leaving Technology was with Little and Walker in South Boston, until 1902, when he was employed by the Viscaloide Company of Leominster, Mass., for two years. He then worked for the Du Pont Company at Wilmington, Del., from 1904 to 1906, when he made connections with the Denison Manufacturing Company of Framingham, Mass., where he remained until 1922. In that year he went with the Multi-bestos Company of Walpole, Mass., and then with the Lowe Paper Company of Ridgefield, N.J., where he remained until

1933. All this experience prepared Bill well for his work with the Glyco Products Company of Brooklyn, N.Y. During the period from 1923 to 1946 that he was with that concern, he was practically in business for himself, since the company made no demands on his time, his income depending largely on the amount of business he brought in. Although his central office was in Framingham, he traveled extensively throughout New England, thus having an opportunity to call on his classmates in that area. He also found time to do some consulting work, notably with the Lithomat Company in Cambridge. Several years ago Bill suffered from a shock which left him partially paralyzed, but with true grit he carried on his business, with the aid of his wife, up to the time of his death.

Miles Sherrill and his wife enjoyed the summer at Montpelier, Vt., but by the time this note appears in print will be back in Cambridge, for Miles has been reappointed honorary lecturer at the Institute for the coming school year.

My vacation was spent at Jefferson, N.H. Finding that I was only some 30 miles from Sugar Hill, I motored over to see Art Hamilton. On the side of the mountain Art has built himself a dream of a house (although if you tried to find your way around at night, you might find it a nightmare). Believe it or not, one gets to the second story through the chimney. Most of the furniture was made by Art himself in his workshop, which is one of those things most of us dream about but never acquire. Rooms crop up in the most unexpected places "just around the corner." When I begin to write my murder mystery thriller, I am going to ask Art to let me come there to absorb some of the atmosphere. (There are some spirits in the house.) Art drew the floor plans, and the architect asked him whether he were tight when he drew them. "No more so than usual," was the reply. So you see Art's gift of repartee has not diminished with the years. — BURT R. RICKARDS, *Secretary*, 381 State Street, Albany, N.Y. ARTHUR H. BROWN, *Assistant Secretary*, 53 State Street, Boston 9, Mass.

#### 1900

Francis Church Lincoln has recently been appointed a commissioner on the South Dakota Natural Resources Commission and is engaged in writing pamphlets on South Dakota mineral resources with the object of stimulating the growth of the state's mining industry. Dr. Lincoln is state inspector of mines, a position to which he was appointed last September, and maintains an office at Lead, as required by law, but continues to live at his Rapid City home and acts as part-time professor of mining at the South Dakota school of mines and technology. He and Mrs. Lincoln spent June Week at West Point at the graduation of their oldest son.

An appreciation of James Hervey Batcheller by F. W. Libbey '06: "Too rarely we come to know a man who has that indefinable quality which develops in us not just liking and respect but real affection. Jim Batcheller, who passed away on April 20, was that type of person. His former students and associates at Oregon State College, his other friends at Corvallis, and his fellow members of the Oregon section of the American Institute of Mining and



Metallurgical Engineers, among a large number of friends in all parts of the country, were saddened to learn of his passing. For the past two or three years his health had been poor, but his cheerful reports always gave one the impression that he was getting better. James H. Batcheller was born in Boston in 1878. He attended Boston public schools and Technology, graduating from the latter in 1900. After numerous professional engagements in the western United States, Mexico and Alaska, he joined the faculty of Oregon State College in 1919 as head of the mining engineering department. From 1933 to 1936, he was secretary of the Oregon state mining board. In 1941, he resigned from the college because of ill health. As long as he was able, his particular hobby was raising tulips and narcissi. At his home, Point Lookout, just west of Corvallis, his friends were always genuinely welcome, and during the last few years, when his activities were much curtailed, he especially enjoyed hearing at firsthand any news connected with mining matters of the state. He joined the A.I.M.E. in 1900 and was a life member. He was a charter member of the Oregon section and served three terms as its chairman and eight terms as secretary-treasurer. Last year the section presented him with a plaque setting forth appreciation of the members for his services to the section and for his sympathetic help to his students. Jim Batcheller will be greatly missed at those section meetings, which he enjoyed so much, and his friends will always remember him as a cordial, sincere gentleman."

The Worcester *Telegram* has the following to say of Mead: "From the middle west comes George Houk Mead, Dayton, Ohio, paper manufacturer, with a half century of experience in business and an extensive background of advisory service to the government. Mead has been a member of the advisory committee of the Office of War Mobilization and Reconversion since 1942. He also has served on the War Labor Board and the advisory board of the Office of Economic Stabilization. A graduate of Hobart College and . . . Technology, Mead is the father of six children. One son, George H. Mead, Jr., was killed in action at Guadalcanal while serving as a Marine lieutenant; another, H. T. Mead, served with the Army Air Forces."

The Washington *Times-Herald* of last August 12 had the following notice: "Charles H. Stratton, 68, of 5320 39th Street, N.W., . . . died on Friday, August 9, in Sibley Hospital. He will be buried in Gardner, Mass. A government architect for the past 45 years, he was superintendent of construction of Bancroft Hall and other buildings at the Naval Academy. Prior to his retirement July 1, he was in charge of landscaping veterans' hospitals throughout the United States. A native of Gardner, Mr. Stratton was graduated from Technology in 1900. He worked as an architect with the Treasury Department and was later employed by the Veterans Administration. He belonged to the Masonic order. He is survived by his wife, Mrs. Marian W. Stratton. Stratton was a faithful member of the Washington Society of M.I.T., attending nearly all the meetings."

The Chicago *Sun* of June 19 carried the following notice: "James T. Harahan Jr.,

73, retired executive of the Inland Steel Co., member of a family prominent in railroad circles, died [on June 18] in Wesley Memorial Hospital after a long illness. He lived at 190 E. Pearson St. Mr. Harahan was a son of James T. Harahan Sr., president of the Ill. Central Railroad from 1906 until his death in 1912, and brother of the late Wm. J. Harahan, former president of the Pere Marquette, Chesapeake & Ohio and Nickel Plate railroads. Mr. Harahan was graduated from . . . Technology in 1898, and was associated with the Buda Co., 35 E. Wacker Dr., manufacturer of railway supplies, until 1914. After a long illness, he became special representative in the railroad department of the Inland Steel Co. in 1921. He retired in 1931. He was a member of the Sigma Chi fraternity, serving as national officer from 1943 to 1945. Surviving are his wife, Marie, and a sister, Mrs. Anne Effinger of N.Y."

Lately reported by the register of former students is the death in 1941 of Miss Alice T. Lee. — Tom Perry called on the telephone in September in his usual breezy style and said that he was in Boston attending the fall meeting of the American Society of Mechanical Engineers. He was in the best of health and sent his best regards to all friends. He had spent the week end with Ziegler. — C. BURTON COTTING, Secretary, 111 Devonshire Street, Boston 9, Mass.

#### 1901

The class notes intended for the November issue which I reported last month as lost in the mail have not been found; but we fortunately have been able to duplicate the clippings, and I have reproduced the rest of the notes which appear below.

The 45th reunion of the Class was held at the New Ocean House, Swampscott, Mass., on June 6 and 7, with 26 present at the class dinner and business meeting on the evening of June 6. The names of the men in the class photograph are as follows: Left to right, front row — William E. Farnham; Asher L. Weil; Edward Seaver; Philip W. Moore; Robert L. Williams; Guy C. Peterson; Harry R. White; Willard W. Dow; Theodore H. Taft; and John Boyle, Jr.; rear row — V. Frank Holmes; Mansfield Estabrook; Harry W. Allen; Robert M. Derby; Roger W. Wight; Ralph C. Robinson; George W. Allen; Edmond F. Brigham; Henry W. Chambers; J. Russell Putnam; Edward H. Davis; and Joseph D. Evans. In addition, James F. Monaghan, Ralph H. Stearns, Albert W. Higgins, and F. Ward Coburn attended the class dinner. Mrs. Harry White, Mrs. Joseph Evans, Mrs. Albert Higgins, Mrs. Russell Putnam, and Mrs. Ralph Robinson also came to the reunion. A few spent Wednesday night at the hotel but most came at about noon on Thursday, June 6; and the afternoon was passed in renewing friendships, playing golf, motoring, or in other ways according to individual preference. Shortly before six o'clock the class photograph was taken very successfully. No comment appears to be indicated. The picture speaks for itself. Immediately afterward an enjoyable cocktail party added to the mellowness and good fellowship of the evening.

President Williams presided at the class dinner and business meeting on Thursday evening, June 6, with Al Higgins acting as

toastmaster. A poll revealed that about one-half of those present were still active and half were retired. Each man was called upon to make a brief report of his activities since leaving Technology. An unanimous vote of thanks was given to Asher Weil for printing the Class Register. (The Secretary has some copies in reserve, should any member of the Class desire one.) A telegram from Lammot du Pont expressed regret that he could not be present because of a previous engagement to attend the annual meeting of the Manufacturing Chemists' Association on the same date and sending best wishes. It was voted to send him a telegram saying that we missed him. The Secretary read the minutes of the previous business meeting, which was held at the 40th reunion on June 7, 1941. It was voted to approve the minutes. The nominating committee, consisting of Ed Seaver, V. Frank Holmes and John McGann, named the following to be voted on as class officers: Philip W. Moore for president; Albert W. Higgins for vice-president; Guy C. Peterson for secretary and treasurer; Theodore H. Taft for assistant secretary. It was voted to have the Secretary cast one vote for the nominations as presented. The term of Theodore H. Taft as class member of the Alumni Council has not expired. The Treasurer made a five-year report to June 6 which shows that all bills have been paid to date and that a good cash balance remains. It was voted to accept the financial report. The Secretary read the names of the 38 members of the Class whose deaths had been reported since the 40th reunion. All stood in silent respect to their memory. The toastmaster, Al Higgins, gave a short talk, and the new President, Phil Moore, made some pleasing remarks and then adjourned the meeting at 11:05.

The next morning, Friday, was given to golf, or whatever fancy suggested, and the reunion dispersed after lunch. Some met again the next day, which was Alumni Day at Technology. Moore, Farnham, Williams, Estabrook, Peterson, Chambers, Bob Darby, Mr. and Mrs. George Marsh, Mr. and Mrs. Higgins, Mr. and Mrs. Putnam, and Mr. and Mrs. Evans were at the Alumni Banquet, and Mrs. Philip Moore and Mr. and Mrs. Robinson attended the luncheon and other activities at the Institute.

I report with regret the death of Harold Wesson on August 29 at Wesson Memorial Hospital, Springfield, Mass. In forwarding the account below taken from a Springfield newspaper, Theodore Lange writes: "I am enclosing a clipping regarding the passing of our classmate, Harold Wesson. I'm sorry I missed the 45th reunion but hope for better luck on the 50th. We have here an interesting club known as the 'M.I.T. Club of the Connecticut Valley' covering Springfield and vicinity. About 300 members meet four times a year with an average attendance of 40 to 50."

The clipping reads as follows: "Harold Wesson, 66, of Glen Arden, Longmeadow, former president of the Smith and Wesson Company, died in Wesson Memorial Hospital. . . . He was a veteran of World War I, and most of his life he was identified with the small arms industry. He was the son of Frank Herbert Wesson and Sarah (Lovell) Wesson and was born Oct. 17, 1878, in the old Wesson mansion at 220

Maple Street. He was the grandson of Daniel B. Wesson, one of the founders of the Smith and Wesson Company. He attended the old Springfield High School and . . . Technology, graduating in 1901. Following his college years he attended the Lawrence Scientific School.

"He was first employed by the New York Shipbuilding Company of Camden, N.J., and rose to the position of assistant superintendent of the engineering department. In 1909 he became associated with the Smith and Wesson Company and learned the business from the ground up. He became assistant superintendent, superintendent, vice-president, and on the death of his uncle, J. H. Wesson, he was elected president of the company in 1920.

"He was also a director of the Chicopee National Bank and a member of the advisory committee of the Puritan Mortgage Corporation of New York. He was a member of the Colony Club and the Longmeadow Country Club of this city; the New York Yacht Club, the Eastern Yacht Club of Marblehead, the Larchmont Yacht Club, the Indian Harbor Club, the Seawanhaka Yacht Club, Oyster Bay, N.Y., and others. He was a member of the Newcomen Society, the Army and Navy Club, and the Tuxedo Club, and a lifelong member of Delta Psi Fraternity, St. Anthony Club. He was a member of the Church of the Unity.

"On Nov. 2, 1908, he married the former Miss Helen M. Stedman of Boston. During the first World War he served in the Naval Aviation branch and held the rank of lieutenant commander. Following the recent war, Wesson served on the small arms advisory committee to assist the OPA and the WPB in setting up price material controls for the small arms industry. His appointment was made by Chester Bowles, former OPA head in Washington. During his years as head of the local revolver manufactory Wesson invented and received patents on several items which increased the efficiency and fire power of the Smith and Wesson revolvers. During his presidency the Smith and Wesson guns acquired an international reputation among the small arms makers in this country and abroad."

From Mrs. Wesson we have received the following account of his hobby and interest in boats: "It might be mentioned that Mr. Wesson was an ardent sailor, having had all types of boats, beginning when he was at Technology with his first *Shawara*, a 25-foot sloop, and later having a 40-footer and 10-meter by the same name; also many other boats, including fast motor boats. Mr. Wesson sailed boats of every size, and during the war years, when he could take only week-end vacations on the Cape, he kept a small 110 sloop at Cotuit." Mr. Wesson leaves his widow, Helen Stedman Wesson; one brother, Frank H. Wesson; and two sisters, Mrs. John Tucker Murray of San Clemente, Calif., and Miss Cynthia Wesson of Cotuit, Mass.

Transmitting a clipping about Will Kelley, Phil Moore says: "The enclosed news item about Will Kelley appeared in the local paper as well as in the *Chicago News*. It does not say that he is retiring or anything of that sort, but does comment on his 45 years of service with the Commonwealth Edison Company. My tenth grandchild and fourth grandson has arrived."

The item runs as follows: "Will G. Kelley, 730 Hibbard Road, Winnetka, assistant chief electrical engineer of Commonwealth Edison Company, celebrated his 45th service anniversary with the Chicago utility last week. The veteran started his Edison career in 1901 as an inspector shortly after graduation from . . . Technology. He served as assistant district superintendent, overhead engineer, assistant engineer of distribution and plant design engineer before being advanced to his present position in 1943. Mr. Kelley has held many important committee posts in the American Society for Testing Materials, International Electrotechnical Commission, and National Electric Light association, and he is a life member of the American Institute of Electrical Engineers. He has played a prominent role in the drafting of both the national and state electric safety codes and in standardizing construction methods. Mr. Kelley is a member of the Union League Club and Sunset Ridge Country Club. A Winnetka resident for the past quarter-century, he is married and has a daughter and two sons, one of whom, Fenton, has just recently received his discharge from the Army." GUY C. PETERSON, *Secretary*, 788 Riverside Drive, New York 32, N.Y. THEODORE H. TAFT, *Assistant Secretary*, Room 3-266, M.I.T., Cambridge 39, Mass.

#### 1902

Our Class had a representation of six at the Alumni Banquet in June — Bill Kellogg, Dan Patch, Harold Davis, Lewis Moore, Norman Borden, Hunter, and Philbrick. Walter Fitch was present at the noonday lunch. Proctor and Jason Mixter were around the Institute attending committee meetings and had an opportunity to see some of us. Kellogg reported that he had joined the retired list but at that time gave no news of his future; we received a letter, however, under date of June 25, Langshaws, Queen Anne, Md., which reads: "I don't know whether you have been officially notified of my retirement this month as president of the Edison Electric Institute. I moved our household goods from New York down here last week. We have a 400-acre plantation here on the eastern shore of Maryland which I acquired about 10 years ago as a place to retire to when the time came. We have been here at all seasons of the year since then and love it. For the present, I expect to get back to New York about five days a month for board meetings, and so forth, but otherwise shall be a farmer from now on. Except for electricity for light, power, and communication, and the automobile for transportation (which I admit are big exceptions), this country is very much the same as it was in colonial times."

Notice of retirement of Bob Williams has been received from the Alumni Office: "Robert S. Williams, Head of the Department of Metallurgy at M.I.T., who acted as deputy dean of engineering during the war, retired on July 1. Dr. Williams, though relieved from active teaching responsibilities, will continue to serve as dean of Army and Navy students with the rank of professor emeritus and honorary lecturer. He has been associated with Technology for 44 years. He is co-author with Professor V. O. Homerberg of *Principles of*

*Metallurgy*. It would seem that both Kellogg and Williams are not retired but simply slowed down in their activities.

A clipping from the *Minneapolis Star Journal* on September 4 makes the following statement: "Retirement of Dr. Samuel C. Lind, first dean of the University of Minnesota's institute of technology, effective July 1, 1947, was announced . . . by J. L. Morrill, university president. A faculty committee has been appointed by Dr. Morrill to aid in selection of a successor. . . . Dean Lind, who will reach retirement age of 68 on June 15, 1947, has served on the faculty since 1926, when he joined the staff as director of the school of chemistry and professor of chemistry. When the institute of technology, which includes the college of engineering and architecture, the school of chemistry, and the school of mines, was formed in 1935, he became its first dean."

Notice has been received of the death of George Allen Ross, IV, on January 21, and Arthur H. Sawyer, III, on April 21. Ross was a member of the firm of Ross and MacDonald in Montreal, where he had long practiced his profession and had a share in the designing and erection of many public buildings. Sawyer, at the time of his death, was living in Hingham. He had practiced his profession of mining earlier in Michigan and British Columbia but at the time of his death was engaged as an investment counselor.

The first week of September was a very pleasant vacation week for your Secretary. On Tuesday, the third, he became a member of the grandfather section of the Class through the birth of Donald Munro, the son of Burton and Jean Munro Philbrick. On the following Saturday; the seventh, the proud grandparents were in Chicago and attended the wedding of their younger son, Richard, and Ruth Andrew Rowe of Chicago. The wedding ceremony was held in Bond Chapel of Chicago University, where both are studying for their masters' degrees.

All members of the Class should now begin to arrange their plans to gather together on the 13th, 14th, and 15th of next June for our 45th anniversary. The time is set as the three days preceding Alumni Day, which will be on Monday, the 16th; the place is yet to be fixed upon. — BURTON G. PHILBRICK, *Secretary*, 246 Stuart Street, Boston 16, Mass.

#### 1906

The 40th reunion of the Class was held at East Bay Lodge, Osterville, Cape Cod, on June 27-30. Thursday, the 27th, was one of those "rare June days" immortalized by the poet, and the three following days were just as beautiful. Your reporter shined and gassed the family car, made sure that it contained leisure clothes, golf clubs, and his wife, and shoved off from Arlington late in the forenoon. A leisurely ride along the South Shore with a stop for luncheon resulted in our arrival at the Lodge at 4:30. On the road between the Canal and Osterville, we caught up with a car containing Henry and Sadie Ginsburg, thus forming a parade of two cars when we reached our destination. The Lodge register showed that Burton and Marie Kendall and Harold and Agnes Coes had already checked in. Later, Jack Norton, Terrell Bartlett, and



Floid and Frances Fuller appeared, bringing the attendance for the first day to seven classmates and five guests. The evening was spent on the piazza in a "gabfest," which was ended by retirement at a conservative time.

Friday morning, Jack Norton, Burton Kendall, and the Secretary made a very important mission to inspect the golf course at Wianno, to be sure it was in suitable condition for the class championship the next day. The others spent their time talking, shopping at Hyannis, and greeting new arrivals, including Andy Kerr, who came over from his near-by home in Barnstable to conduct a sightseeing tour of the Cape in the afternoon. This tour included the fish hatchery at Barnstable, Veg-Acre Farm at Forestdale, belonging to W. H. Richards '27, and the Barnstable end of a Hyannis-Nantucket radio installation which the New England Telephone Company was installing to provide more circuits to the Island. After dinner, the crowd gathered in the living room of the Lodge and enjoyed motion pictures shown by Bill Abbott of his recent trip to the Pacific Coast and Kodachromes by Ralph Patch of Cape Cod and Florida views. Many of the pictures were of the type that produced audible "Oh"'s from the interested audience. By bedtime Friday night the attendance had reached a total of 23 classmates and 15 guests. The Friday arrivals, besides Kerr, included Abbott, Ball, E. B. Bartlett, Blackwell, Sherman Chase, Darling, Hemphill, and Hobson as stags; husbands and wives were the Benhams, Coeys, Guernseys, Hoefers, Patches, Philbricks, and Taylors; and Terrell Bartlett's party, consisting of Mrs. Bartlett and two nieces, the Misses Storrow and Helen Cassin.

Saturday morning was devoted to swimming, golf, touring, and so on. In the afternoon, Ralph Patch, who summers at Dennis Port on the Cape, led a tour of the Cape which, judging by the comments of those who took it, was most enjoyable. The highlight of the three days' program was the class dinner on Saturday night. Fifty were present — 29 classmates and 21 guests. In addition to those listed above, our Assistant Secretary, Ned Rowe and Marion, the Barneses, Farwells, Hinckleys, Lewenbergs, A. B. Shermans, and Walter Davol and his daughter, Madeline, and Henry Loring were with us. In case anyone wishes to check the accuracy of this report, it might be explained that Ralph Patch and his wife and Sherman Chase did not remain for the dinner. The "postprandial" features, as Allan Winter Rowe '01 used to call them, included the routine class reports, a short talk by the Assistant Secretary on affairs at the Institute, awarding of the prizes, and a most interesting talk by Harold Coes on his recent trip to India. As recorded in the May Review, the engineering firm of Ford, Bacon and Davis, of New York, was retained by the planning and development department of the Government of India to aid it in some of its industrial problems, and Harold, who is vice-president of the concern, was delegated as a consulting engineer on the assignment. Harold's firsthand description of the conditions in that country made us all realize the difficulties of improving them. The award for coming the longest distance went to Terrell Bartlett for journeying from San

Antonio. The golf prizes were awarded as follows: first gross, Allyn Taylor with a 92; second gross to George Guernsey with a 95. Frank Benham 94 was second gross, but his handicap of 20 gave him first net with a 74. Second net went to Jack Norton with an 80.

Sunday was going home day, and the trek started shortly after breakfast, although a sizable swimming party was held in the morning. By midafternoon the party was over with the exception of the Kendalls, who were spending their vacation at the Lodge, and Henry Darling, who had some telephone traffic matters to attend to on the Cape and remained until Monday morning. As the party disbanded, all agreed that the combination of location, weather, excellent food, good company, and so forth, had made the reunion one of the most successful the Class had ever held. The total attendance at the reunion was 54, 32 of the Class and 22 guests. On Sunday morning, Charley Burleigh, II, visited with the gang. He is in Boston with E. B. Badger and Sons and resides in Merrimack, N.H. Unexpected, but very welcome, attendants were Howard and Mrs. Barnes. Howard has retired and resides in Plymouth, Mass.

Had there been an award for the man who got the most enjoyment out of the party, it would have gone to Terrell Bartlett. Terrell came on from San Antonio with Mrs. Bartlett and their two nieces. It was his first return to Boston since graduation. He arrived in Boston on June 5 and attended Alumni Day on the 8th. Between this date and the reunion his party toured New England and Canada, visiting classmates and points of family and historical interest. While they were in Boston, application was made for Miss Storrow Cassin to enter Wellesley. Although she was not given much encouragement then, readers will be interested to know she is now enrolled there. It was Terrell's visit to Howard Barnes which resulted in the Barneses being with us on Saturday.

Henry Loring, who attended the class dinner, is on Bryant Nichols' 1907 list, as he received his degree with that class. He was with us the freshman year, however, and therefore had a good time renewing old acquaintances. The Secretary was particularly pleased to see him, as we were in high school together and had not met since 1906. He is vice-president of the Ferro Concrete Construction Company of Cincinnati.

The reunion notices resulted in a number of notes of regret from classmates who were unable to attend. These were received from Shields Burr, George Burpee, Bob Clarke, Max Coe, Bob Cushman, Herbert Dean, Bill Farley, Bill Furer, Joe Santry, Ernest Smith, Tom Webber, Malcolm Wight, and Dana Wood. The Secretary appreciates the notes even though they were not all acknowledged.

Our class notes in the July Review included a letter from Sid Carr notifying us of his retirement from the Hawaiian Electric Company at Honolulu and his return to the States. On October 12, he called the Secretary's house from his nephew's residence in Wellesley to say that his host had arranged a cocktail party for that afternoon and would like to have some of the '06 people there. Besides Sid and Mrs. Carr,

the class delegation consisted of Abe and Mrs. Sherman, Henry and Sadie Ginsburg, and your reporter and Alma. The brief reunion was very pleasant. The Carrs will probably spend the winter in Buffalo.

A report of the number of grandchildren was obtained after the dinner, and the 29 members of the Class reported a total of 43 grandchildren. Allyn Taylor led the list with eight, which made him the champion grandfather as well as the champion golfer. Carroll Farwell and Edwin Bartlett tied for second, with five each. While on this subject, we might add that had the canvass been made on September 11, the Secretary could have reported one grandchild, as Robert Todd Kidder was born on that date.

Reference has already been made to the Alumni Day festivities on June 8. The class representation at both the luncheon and the banquet was befitting our 40th anniversary of graduation. At the luncheon, besides the Terrell Bartlett party, were the following couples: the Coeys, Hoefers, and Wights, Jim Wick with Mrs. Wick and two daughters (See the July Review for more information about the Wicks); also, Abbott, Ralph Clarke, Chase, Hinckley, Morris, Patch, and Terrell. Most of the luncheon group were at the banquet except the Misses Cassin. Also at the banquet were Abe and Mrs. Sherman, Walter Clifford, Henry Hubbell, George Hobson, and John Morris. Wendell Terrell was one of the Class who made his first appearance in many years. After a career of teaching and engineering, he is now in Washington doing research work for the government. John Morris and Henry Hubbell were also welcomed as long-lost brothers. Morris resides in Salt Lake City. Hubbell, who was a vice-president of the United Shoe Machinery Corporation in Boston is now retired and resides in Dedham, Mass. The total attendance at the Alumni Banquet was 18 classmates and eight guests. — JAMES W. KIDDER, *Secretary*, Room 815, 50 Oliver Street, Boston 10, Mass. — EDWARD B. ROWE, *Assistant Secretary*, 11 Cushing Road, Wellesley Hills 82, Mass.

## 1907

This will remind you classmates that it will be only about six months from the time you are reading these notes to June 20-22, 1947, when we expect to have our 40-year reunion. I have mailed to all classmates first notices regarding this event. Would that every one of you might have the enthusiasm for it that John Frank and Sam Marx have! Look at this quotation from a note from Clarence Howe dated May 24: "I will be with you at Osterville next year if I possibly can. Unfortunately, our session of Parliament usually drags on through June, but unless something unusual happens, I will not let that interfere. I had a note from Hosmer a short time ago, written from a Canadian Pacific train, I do not know where. He also spoke of the 1947 reunion." Clarence, you know, is minister of reconstruction and supply for Canada. The Boston Sunday *Herald* of September 8 contained quite a story written by a staff reporter who had interviewed our classmate at his summer home at Rockport, Mass., where he was snatching a week's vacation, his first in six years. — During last August and September I had an inter-

change of correspondence with Harold Kingsbury, who is with the legal department of the Du Pont people at Wilmington, Del. To my delight, Harold says that he fully hopes to be with us at Oyster Harbors next June. These and other early indications of intent would seem to show an especial interest which we hope will result in a record attendance in June.

You all received in early October a regular masterpiece of a letter from Harold Wonson, our Class Treasurer, requesting payment of the modest sum of \$3.00 asked for every five years as class dues. I have a letter from Harold, dated October 15, saying: — "So far I have had checks from 93 men, totaling \$285, as three of the men sent checks for \$5.00. This is the best record we have made so far in dues collections, as at the end of the first two weeks in 1936 we had received checks from only 29, and in 1941 at the end of the first two weeks from only 54. In 1936 we did not hit the figure of 93 replies until the 22d week, two weeks after we had sent out the third announcement, and in 1941 it was the 10th week before we had hit this figure, two weeks after we had sent out the second announcement. . . . I am getting a second announcement ready which will go out soon." Most of you men who receive *The Review* also pay dues promptly, so you will not receive any news of the results of Harold's fine efforts from him. Hence the above report. Note the completeness of Harold's records, as evidenced in his letter quoted. You men are entitled to a summarized report of our treasury. The balance on hand July 28, 1942, after our 35 year reunion, was \$400.19. Our \$3.08 of profit on a class dinner added made total receipts as of August 1, 1946, \$403.27. Total expenditures during the four years were \$167.51, of which \$75.00 went to the M.I.T. Alumni Athletic Fund, \$69.26 for secretary's printing and postage, and the balance for varied small items. This made the balance on hand July 31, 1946, \$235.76. Our class contributions to the M.I.T. Alumni Fund are increasing gradually. As I prepare these notes (on October 16), there are still 20 of you who gave last year who have not contributed this year. If you are still one of these, now is the time to mail your check, please.

There is not much news this month. Carl Trauerman's business card gives his address as 505 Montana Standard Building, Butte, Mont., and in the four corners of the card one learns that he is secretary-manager of the Mining Association of Montana, Montana correspondent of the *Wall Street Journal*, president of the Ruby Gulch Mining Company, and member of the governing board of the American Mining Congress. — An item on the social news page of the Boston *Herald* of September 25 stated that Herbert Buttrick Hosmer, Jr., a lieutenant commander, of the Naval Air Station, Tillamook, Ore., son of Bebe Hosmer of our Class, became the father of a son on September 16. The similar page in the *Herald* of October 14 had quite a story telling of the marriage of Bebe's daughter, Patience, on October 12 in Concord, Mass., where our classmate lives. Two of his sons, Humphrey and Samuel, were among the ushers. — The home address of Frederic B. Schmidt, architect, is 939 Maple Avenue, Evanston, Ill.

On October 19, I received a note from John Frank enclosing a clipping from an Indianapolis paper telling of the sudden death during the evening of October 15 of Frank B. Shields at his home in Martinsville, Ind. He had worked at his office in Indianapolis during the morning of that day and had played golf in the afternoon. Frank attended Franklin College of Indiana from 1902 to 1904, then became a member of our Class, taking the Course in Chemistry. He was an assistant in chemistry at M.I.T. from 1907 to 1908, then was successively a research chemist for the General Electric Company, superintendent of the Smithport Export Company, treasurer and general manager of the National Process Company, and then in 1920 founded the Barbasol Company. He was treasurer and general manager until the time of his death, was also president of Bost Tooth Paste Corporation and of B. and B. Bottlers, Inc. He was a patron of the Indianapolis Civic Theatre and of the Indianapolis Symphony Orchestra. He was married twice and is survived by Mrs. Madeline Shields Powell, James R. Shields, age 16, and Judith B. Shields, age 11. — BRYANT NICHOLS, *Secretary*, 23 Leland Road, Whitinsville, Mass. HAROLD S. WONSON, *Assistant Secretary*, Commonwealth Shoe and Leather Company, Whitman, Mass.

#### 1909

Early in the summer Paul had expected to make his usual pilgrimage to Maine, visiting the Dodge families, one at Friendship and the other at his beloved Isle au Haut. Also en route he had planned to visit the Review Secretary at the Isle of Springs and study the boat situation there. Unfortunately he could not get away from Glen Ridge until nearly the middle of September, when he visited his boyhood haunts in Rhode Island and then came to Boston to see his friends at the Institute and elsewhere. He stayed with the Review Secretary and seemed in the best of health and spirits with his enthusiasm for Technology, President Compton, and '09 greater than ever. He has just made a most generous contribution to the sailing opportunities at the Institute by financing the design of a new plywood dinghy. It is expected that it will be christened on Saturday, November 16, by Hope Wiswall, a niece, who will fling a flask of Narragansett Bay water (not ale) across her bow. Some of us plan to be present and witness the ceremony.

But let Paul tell us: "I am just back from somewhat more than a month in New England — in Massachusetts and my native Rhode Island. This time I was with Chet and Muriel Dawes for two days, a perfect interlude for the Secretary. It has always seemed serene and remote, if those are the right words, over there on Mount Vernon Street. Busy Massachusetts Avenue seems far away, and somehow this time the illusion was enhanced because Chet has some Harvard neighbors who are Hindus and wear their native turbans on the street. At the Institute again I was reminded of the Orient by the many Chinese students whom one sees everywhere. The Institute is an unbelievable place these days. There are the many small houses for married students and their families, and there are several barracks buildings for single stu-

dents. But there seemed to be little evident confusion so far as I could see.

"I came up from my old home town of Providence. I had hoped I might get Bat Thresher '20 to lunch with me. When I telephoned him, he insisted that I come right over and to my great comfort I soon found myself in the restaurant of Graduate House with Bat and Dean Pitre and Paul Chalmers, who is Bat's right-hand man on admissions. I was just in luck! And I think my keenest impression was that in spite of the crowded conditions everywhere, things were going pretty well, thank you! Certainly all three of my hosts seemed unworried and at ease. I had an opportunity to get a good look at the grounds about the Institute buildings. The trees have grown a good bit, as well as the grass, since the Institute moved across from Copley Square. I can give only a glowing report and in these days of difficult labor conditions.

"I must admit that at lunch I asked about the dinghies in the Basin. You see I have always longed to give a dinghy to the Institute. Long before I ever dreamed of going to the Institute, when I could not have been over 16, as a boy in Providence, I hoped I might some day be able to buy a share in a deep-sea square-rigger that plied between the Indies and Narragansett Bay. That was in the Gay Nineties. That was not so long after the heyday of Salem; at least there were many men living who could remember those magnificent vessels. I even hoped that I might work up enough 'drag' to have a hand in naming the ship. She would have been *Hope!* For that word is on the state seal of my native Rhode Island! Well, I need not explain that sailing ships do not now ply from Narragansett Bay to the Far East. Sailing vessels do not even exist in this day of steamships. But I mentioned all this to my hosts at luncheon, and they took me to the sailing pavilion to see Jack Wood, who is in charge of the dinghies. They told Jack that the old grad they had with them wanted to sponsor a dinghy. Jack grinned. Then he explained that they were on the point of perfecting a dinghy made from plywood and if I wanted to underwrite the first one I could do so! So, by the time you read this, if all goes well, there will be a new dinghy in the Basin with the Technology house flag, and her name will be *Hope!* I'll tell more when there is more to tell, for I shall be realizing one of my choicest boyhood dreams!"

"Chet Pope is in Sweden and your Secretaries are getting post cards from him. Chet flew over on business, and I'm hoping for a Pope Travelogue on his return."

We're always glad to hear from Jo Stephenson, X, who as a student contributed so much to Technology, as a member of the Cross Country Team, Hare and Hounds, the Show, and the editorial staff of the Tech, and as treasurer of the Y.M.C.A. As we have previously reported, he has for some time been editor-in-chief of the *Pulp and Paper Magazine of Canada*, headquarters Gardenvale, Quebec. In addition, he is editor of a Joint Textbook Committee of the paper industry, a most successful enterprise. There are five volumes describing pulp- and papermaking methods, processes, and applications, which began 25 years ago and are always in a continuous state of revision. The grand total of sales



to date is 40,000 volumes. Steve tells us a most interesting story concerning himself and his family: "Your appeal for news naturally strikes a responsive note. All editors get that way. In addition to the release from the secretary of the Joint Textbook Committee of the Paper Industry, you may use what you want of the following. We have been in Canada 30 years this month, primarily editing the *Pulp and Paper Magazine of Canada*. This work naturally takes me all over Canada, occasionally to various parts of the United States, and once to England in charge of the industry's exhibit at the British Empire Exhibition. Every mill built in Canada since 1916 I have seen start from the ground. In 1918 our Canadian committee on education decided that the industry should have an up-to-date textbook and invited the corresponding United States committee to collaborate. A joint meeting was held and the Joint Textbook Committee formed; they appointed me as editor-in-chief, probably because I had a nucleus of basic articles already lined up. The committee produced a five-volume work, *The Manufacture of Pulp and Paper* — to which about 100 technical and operating men contributed material. When the first volume appeared, in 1922, the publishers of *Pulp and Paper* were asked by the Canadian Pulp and Paper Association to organize a correspondence instruction service, which also was dropped in my lap. Nearly 2,000 students had enrolled up to last year, when the extra work of preparing the fourth edition of the textbook made it necessary to stop enrolling students. My interest in the educational work is maintained, however, as I am serving the International Correspondence Schools as advisor on pulp and paper technology.

"We have two sons, both married. Harvey served with the Army Air Corps and then with the Allied Military Government. He returned in time to finish his course at Antioch College and is now with us and taking graduate work at McGill University. His wife was graduated from Antioch before enlisting and served as dietitian at the Ledo Base Hospital in India. Robert was graduated from the Roosevelt Aviation School, enlisted in the Royal Canadian Air Force, was flying instructor of United States Army air cadets, and is now with the War Assets Administration at the Naval Air Station in Norfolk, Va.

"As for hobbies, I have a pack of 40 Wolf Cubs and serve as district cubmaster. Church work is not exactly a hobby, but is a very satisfying 'something-else-to-do.' At present, we are planning to build a church after 30-odd years of work and worship in a hall. Saturday night in winter is a regular date at the Curling Club. My editorial work involves quite a lot of photography, and my Leica always has a film in it. I have not attempted color work, as most of my pictures are for reproduction in the magazine. On the large stories, such as our current article on the Espanola mill of Kalamazoo Vegetable Parchment, we engage a professional and do a real job. We spent nearly a week there and took about 100 pictures, some of them 50 miles up in the bush. Another activity at present is carpenter work inside, and landscaping outside, the story-and-a-half cottage we built two years ago. Occasionally, I revert to verse, usually horrible topical parodies."

Sometime in January we received from Detroit a letter from Arthur Morrill, XI, stating that he was home from China on leave and giving a most interesting description of his activities in China and the Far East. We were more than pleased to receive a letter from Lanchow, Kansu Province, China, which reads as follows: "For the last two weeks I have been about as close to Shangri-la as I ever expect to get. I am a little hazy as to just where Shangri-la is, but so was the author of the book. But it seems to be somewhere in Central Asia and the name sounds Tibetan. And I was right on the edge of the Tibetan country, at Hsi-ning, the capital of Kokonor Province. Kokonor, which the Chinese call Ch'ing-hai, is largely inhabited by Tibetan nomads but is now organized as a regular Chinese province.

"There are 60,000 people in Hsi-ning, and they are nearly all Chinese, although the Tibetans and Mongols come into the city to trade. Tibetans are very common in the streets, and there are some Mongols. Many of the Tibetans are lamas, that is monks of the Lamaist branch of Buddhism. There is a famous lamasery 20 miles from Hsi-ning, with many remarkable temples and images, and 3,600 lamas. Butter must be cheaper than candles or kerosene in that pastoral country. At any rate little wicks burn in great tubs of butter in all the temples, and they all have a peculiar odor, due, I presume, to the antiquity of the butter.

"In the bazaar near the lamasery at T'a-erh-szu I bought some fine little saddle rugs which they said came straight from Lhasa itself. At least, the workmanship is better than that of any rugs I have seen made in Kansu or Ch'ing-hai, and the design is quite different from any I have seen from Chinese Turkestan or Inner Mongolia. I also got some good pictures of a group of Mongol nomads who had come to visit the temples from their home range northwest of the big salt lake, Kokonor. They had traveled 20 days on horseback.

"The Mongols were quite willing to have their pictures taken. An old woman of the party came to the government guest-house with a narrow roll of heavy wool cloth she wanted to sell. We didn't make a deal on the cloth, but she was such a picturesque character that I asked, through an interpreter, if I might take her picture. She said that she wasn't much for looks herself, but that there were some girls in their party who were and she would bring them around. Ten or fifteen presented themselves; the chief, his fat young wife, two grown girls, the old woman, and five or six cowpunching retainers in sheepskins. It was a wonderful opportunity to take some pictures, and I am praying that they come out well.

"Hsi-ning is an old city, probably an important settlement before the time of Genghis Khan. It has a formidable city wall, more than 40 feet high, built about A.D. 1410 under the Ming dynasty. It has 60,000 people but, in all directions, it is from 550 to 1,700 miles to the nearest water works. Now, wonder of wonders, under a very capable and energetic Mohammedan governor, they are planning to build one! And I get a great thrill out of having a hand in getting it started. It will provide only 30 liters a person each day and will

not worry about fire protection, but it will be a pure, piped water supply under pressure.

"Your letter of January 4 reached me in Detroit, but I brought it along to China, thinking I might later have something more interesting to write about. Thanks for the news about '09 and especially about Arthur Knipp, VI. So far I have not had an opportunity to go anywhere near Canton, but if I do, I will surely look him up. China is a big country, and it is not so easy to get around as it is in America. Unless you have an important official reason for a trip, it is often impossible to get air transportation. I have Chinese friends in Chungking who have been waiting for months to get to Nanking. Many took their lives in their hands and went down through the Yangtze Gorges in small wooden boats, towed by a still smaller wooden boat powered by two motor truck engines. All my friends got through, but they were frightened nearly to death, and one cargo boat of the National Health Administration was wrecked.

"Don't think from all this, however, that I am having a tough time. Except that the food is curious at times, and that you have to be more alert on the subject of bedbugs than in America, I lead the life of Riley. At home your colleagues argue with you about technical points, but here you often get treated as the last word. The city streets and villages swarm with photographic subjects, any one of which would stall traffic in Detroit. And just now, with the war over, sanitary engineering is clicking wonderfully. There are great financial difficulties, but there are dozens of cities that, with a little engineering encouragement, will struggle to build a water or sewer system. And since there are still cities of half a million people without either, there is plenty of work to be done. Give my regards to all the Class and tell them I hope to see them in person in a year or two." Thanks, Arthur, for the interesting story. The Class Secretaries appreciate your splendid co-operation.

President Compton was chairman of the Joint Chiefs of Staff board of the Bikini atomic bomb tests, and not only was Brad Dewey, X, a member of this group, but he and the president were both members of the presidential commission. Both, of course, witnessed the tests, and on September 11, Brad, President of the American Chemical Society, addressed that body on the general results of the tests. There is no positive defense against the bomb, and in Brad's opinion, "National security dictates the adoption of a policy of instant readiness to defend ourselves vigorously against any threat of atomic weapon attack . . ."

— PAUL M. WISWALL, *Secretary*, 90 Hillside Avenue, Glen Ridge, N.J. CHESTER L. DAWES, *Review Secretary*, Pierce Hall, Harvard University, Cambridge 38, Mass. *Assistant Secretaries*: MAURICE R. SCHARFF, 285 Madison Avenue, New York, N.Y.; GEORGE E. WALLIS, 1606 Hinman Avenue, Evanston, Ill.

## 1910

I have had very little information regarding classmates for the past two months with the exception of the returns from our classmate, Achilles Hadji-Savva. While these returns have been generous, the do-

nors have refrained from writing anything which would prove interesting for the class notes. Also, I have been away on a vacation, during which time I forgot about business and the job as class secretary. My wife and I took a trip to Churchill on Hudson Bay, Canada. It was a most enjoyable trip, different from anything we have done previously, and we returned feeling rested. I should not dare to describe the fishing in the northern lakes of Canada, as I should be accused of the best fish story of all time.

The following letter is from Kenneth Armstrong: "I have been intending for some years to write a few lines about myself in case any of my 1910 classmates might be interested, as I am every time I get *The Review*, to find out what my classmates are doing. The main trouble with me is that if I should try to write all about what I have been doing in the last 36 years it would take too much space. So I will make it brief.

"I have lived in Washington for 30 years. When I came here, I had a government job; I resigned in 1922 and went into the real estate business. The depression caught up with me, and, in 1930, I took a job in the Supervising Architect's Office, remaining with it through the various reorganizations, when it became a part of the procurement division of the Department of the Treasury and later of the Public Buildings Administration. During the latter part of my service there, I was examining and reporting on claims which contractors made against the government and on lawsuits which they instituted in the Court of Claims. In this way, I became acquainted with the attorneys in the claims division of the Department of Justice and worked with them on these lawsuits. When the war came on and the government quit building post offices, and such, my job threatened to disappear for lack of funds, so the Department of Justice set up a job with the very portentous title of consulting engineer, and I transferred over in 1943. I am still doing the same kind of work — examining claims and advising the attorneys on the technical features of these lawsuits. It is a very interesting job, and I get to travel around a good deal, interviewing prospective witnesses, attending hearings, and so on. I have been to Boston a few times but have never happened to hit a time when any M.I.T. activity was going on. I visited Jack Babcock two summers ago, however, and spent a pleasant evening at his home.

"I married a Winchester, Mass., girl in 1915, and we were on the road for a few months before we moved to Washington. We have two sons, William and Howard. William is 28, has been married nine years and has two sons and a daughter. He lives in Towson, Md., which is just north of Baltimore, and has a good job with Bendix Radio. He also travels a bit — to subcontractors' plants to expedite procurement of materials. He missed the war because of having an essential job. Howard is 23, and was married last June, as you noted in the *July Review*. He was in the Coast Guard for more than three years, was stationed for a while at Portsmouth, N.H., and then was transferred to the Pacific. He has been to Hawaii, New Caledonia, Australia, New Guinea, and the Philippines, and was

in action at Biak and Leyte. He also went to the Aleutians and was on convoys going west from here. He will enter the University of Maryland this fall.

"I used to be active in the Washington Society of the M.I.T. but attend meetings only once in a while now. I was president back in 1930 or 1931, and secretary after that. I saw Ted Whitney there once, when he was here during the war. I also used to be quite active in Masonic affairs and was master of my blue lodge back in 1922. I have been in the Royal Arch and the Council for some years, and two years ago joined the Scottish Rite and the Shrine, but have not been active in them, although I like to visit meetings when I am away from home on trips. My main outside activity, however, has been in civic affairs. Because of the voteless condition of the District of Columbia and the lack of local self-government, the unofficial and voluntary citizens' associations are the only means the taxpayers have to exercise any influence in their government. I was president of my local citizens' association in 1930, and have been its treasurer for the last five years. I am also treasurer of the Federation of Citizens' Associations and am now serving my seventh term. I am a delegate to that body from the local chapter of the American Association of Engineers, which is one of the few city-wide organizations that are affiliated with the federation. I have been president of the local chapter for several years, but it is not very active, and I am trying to get a younger man to take the job.

"When I came to Washington, I was surprised to find that there was no real local government here. There is an administrative setup headed by three commissioners appointed by the President of the United States, but the real government is Congress, which acts as our city council. We had local self-government here up to some 70 years ago, but it was abolished when Congress agreed to pay half of the cost of running the city. The Federal government owns about half of the real estate, and it is tax exempt, but it hasn't paid half of the costs for a good many years now. This year Congress appropriated eight million dollars, about 10 per cent of the budget. Nevertheless, Congress still tells us how we may spend our tax money and now says that we must find some new sources of revenue. I am chairman of the committee on fiscal relations and taxation of the federation, and so am up to my neck in this matter.

"The citizens have been working hard for the last 25 years or more to get local self-government restored. I have also been quite active in this movement. Last year the congressional committee on the reorganization of Congress recommended that a commission be set up to draft a city charter, and a bill was introduced to do this, but it died when Congress adjourned. Since very few persons out in the States know anything about the matter, and we have to depend upon Congress for action, we should appreciate anything that those of you who have votes will do for us by way of educating your congressmen and senators. If you want to learn anything about conditions in Washington, get a copy of the *Magazine Digest* for August, and read the article on "Washington —

The Worst Governed City in America.'" — HERBERT S. CLEVERDON, *Secretary*, 120 Tremont Street, Boston 8, Mass.

## 1911

Just before retiring as senior United States representative on the United Nations military staff committee to devote full time to his duties as commanding general, Strategic Air Command of the Army Air Forces, George Kenney, I, said that the answer to world peace was the eventual abolition of all national armies, navies, and air corps in favor of an international force. "This may take years and years to accomplish," he said, "but the real answer lies with the countries of the world turning over their forces to UN." George said there were two immediate obstacles to such a force — the natural demand for security and the strong principles of national sovereignty. As a first step, he said, the United Nations organization would have to get its members to turn over armed contingents to the world agency for use much in the fashion of the French Foreign Legion. "We must hope that such a force will be ready to function before the next war comes," he concluded. "The loser in that war will be wiped out and the winner, if there is one, will be 50 per cent gone."

A few days earlier — on October 1, to be exact — our other distinguished officer and reunion speaker, Luis de Florez, II, was returned to inactive duty, following his post-war duties as deputy chief of naval research.

Speaking of the reunion, those of us present remember the cocky prediction of Ted van Tassel's son-in-law, Russell Harmon, a lieutenant in the Army Air Forces — well, Nancy had her baby son on Sunday, October 13, and mother and son are both fine, Ted writes, "and the father is doing as well as could be expected." Just three days earlier my own daughter-in-law, Mrs. O. B. Denison, Jr. (Virginia Copp), of Cornish, Maine, presented her naval aviator husband with a baby daughter, Deborah Fenn — our first granddaughter, although Sara and I have two grandsons, the children of our daughter, Mrs. Peter Barton of Boylston, Mass.

At a candlelight service in the Newtonville Methodist Church on September 21, Dorothy Ell, daughter of Carl and Etta Ell, became the bride of Judson Strong of Great Neck, Long Island, N.Y. Daddie, by the way, saw another of his dreams come true four days later when Northeastern University, of which he is president, had a cornerstone laying for the new million-dollar student center building on the Huntington avenue campus in Boston. During the exercises he expressed the hope that "Northeastern shall always be in essence the complete fulfillment of the cherished ideal of the young veteran whose college course was interrupted by the war."

Again it was my pleasure to attend the annual Freshman Camp, with more than 450 freshmen present over the last week end in September. One of the most active of the counselors was Bob Hildebrand, a senior and son of Walter Hildebrand, I, of Wilmette, Ill. I told him how sorry I had been that his dad couldn't attend the dinner they had for me in Chicago in mid-August, and he told me that about two years ago Walter had a stroke which paralyzed his entire right side and an accompanying cerebral



hemorrhage which caused his mind to fog. He is in bed most of the time at Wesley Memorial Hospital in Chicago, and Bob says it is a very pathetic case "and awfully tough on Mom." I wrote to her at once, of course, and expressed our best wishes for a miraculous cure eventually.

Ever watchful, Ottilie Cushman, wife of Paul, VI, wrote recently from Valparaiso, Ind., enclosing a page from *Steel* for August 19 which had an item stating that Rufus E. Zimmerman, IX, United States Steel's Vice-president in charge of research and technology, has been elected to receive the Medal for the Advancement of Research for 1946, awarded annually by the American Society for Metals, the award to be made on November 21, during the National Metal Congress and Exposition in Atlantic City.

While convalescing this spring, Don Stevens, II, came across a November, 1906, issue of *The Sagamore*, Brookline High School monthly, and therein he found a story — "An Embryo American" — signed G. C. K. '07. Without consulting General Kenney, we present it for your enjoyment: "'Da peanut, fi' centa.' The little ragamuffin at the entrance to the baseball grounds repeats his entreating cry to the baseball fans who are hurrying to get the best seats for the coming game. A man rushing by grabs a bag of peanuts, and tossing back a quarter, hurries on. The boy deftly catches the coin, deposits it in his coat pocket and is ready for the next customer. But finally the supply of peanuts is exhausted, and the game has commenced. The youngster counts up his money, puts his basket over his head, and whistling a tune of sunny Italy, turns the corner on his way homeward.

"'Da peanut, fi' centa.' The plea seems to stay in one's mind. One wonders for what purpose this poor, little, half-clothed boy stands here day after day. Is it to save money to send to a father, mother, or perchance a sister or a brother, to enable them to come to this land of freedom? You ask yourself the question. But no, this work has a nearer, more definite end; it is — hush — let me whisper — it is to buy a baseball glove!"

We had a card from Frank Osborn, II, from Miami in mid-September saying he was on the way back to South America, where for years he has been with the Andes Copper Mining Company at Potrerillos, Chile, via Chanaral. He was flying, with a stop en route planned at Lima, Peru. How we enjoyed him at the reunion! — From the Alumni Office we learn that Bob Schurig, VI, who became a lieutenant colonel in World War II, has returned to civilian life after long service at the ballistic research laboratory at Aberdeen Proving Grounds, Md. Bob has gone back to the General Electric Company at Schenectady, N.Y., where for many years before hostilities broke out he had been a development engineer.

Believe it or not, 1911 was still two men short of its quota of 121 subscribers to Alumni Fund VII when the last list was issued, as of September 30. Past records, however, show good 1911 returns in the last quarter of each calendar, so here's hoping we will again soar well above our quota. Don't forget to look for the story of the annual "Seven Come Eleven" party

(on November 7 at Walker Memorial, M.I.T.) in the next issue. Also, best wishes for a very merry Christmas to you all! — ORVILLE B. DENISON, *Secretary*, Chamber of Commerce, Gardner, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford 55, Mass.

## 1914

There has scarcely been an issue of these notes in recent months which has not recorded the death of a classmate. The usual causes, especially heart disease, have been named, but in many of these cases, unmentioned, there has been the toll of war strain. Steadily as these deaths have been noted, it was nevertheless with a sense of near incredulity that on Sunday, September 22, your Secretary received a telegram telling of the death the previous evening of Arthur Calbraith Dorrance at his home, Leahurst, Ardsmore, Pa. It has been known that Buck was not in rugged health, that he had carried a tremendous war burden, and that he had had an unusually trying time at his plant this summer, but to many of us Buck was practically immortal: he had always been our President; he was the very soul of 1914. But he has presided over his last reunion.

Buck was born in Bristol, Pa., and came to the Institute from the Episcopal Academy of Philadelphia. He immediately became a leader in our Class. Although not succeeding to the class presidency until our senior year, Buck held many important positions during undergraduate days. He was active in the Tech Show, found time for athletics, being on the tug-o'-war and relay teams, managed the class track team, was editor-in-chief of "Technique 1914," active in the professional societies, member of various clubs especially the Beaver, the Round Table, and Theta Nu Epsilon. He was a member of Sigma Alpha Epsilon Fraternity. His position as senior class president made him president of the Institute Committee and the leader of all undergraduate activities.

Just as he had led an active undergraduate life, so he devoted himself to many public affairs. His banking associations included directorships of the Federal Reserve Bank of Philadelphia, the Philadelphia National Bank, the Guaranty Trust Company of New York, the Camden Safe Deposit and Trust Company, and the Girard Trust Company of Philadelphia. Other directorships included those of the Pennsylvania Railroad, the West Jersey and Seashore Railroad Company, the Philadelphia and Camden Ferry Company, the Port Reading Railroad Company, the Lehigh Valley Railroad Company, the Bell Telephone Company of Pennsylvania, the Penn Mutual Life Insurance Company, and term membership on the Institute Corporation. Buck was also active in many civic affairs, among others helping in the organization, and serving as first president, of the Camden County Community Chest. He was a vestryman of the Church of the Redeemer at Bryn Mawr, where the funeral was held. His name was on the rolls of many clubs.

Except for two years' service in World War I as an officer in the Coast Artillery Corps with the final reserve rank of major, Buck's entire life after graduation from the Institute was associated with the canning

industry. He served as president of the Franco-American Food Company and in 1928 became general manager of the Campbell Soup Company. Two years later, on the death of his elder brother, he succeeded to the presidency of that company. Buck was also active in trade association affairs of his industry.

On February 7, 1918, Arthur Calbraith Dorrance married Elsie Allan Ross, who, with two sons, Arthur Calbraith, Jr., and David Ross, survive him. They have lost a devoted husband and father; we, a loyal leader and genuine friend. — H. B. RICHMOND, *Secretary*, General Radio Company, 275 Massachusetts Avenue, Cambridge 39, Mass., CHARLES P. FISKE, *Assistant Secretary*, 1775 Broadway, New York 19, N.Y.

## 1915

Excelsior, hallelujah, and three cheers! 1915 now has something to crow or crab about. At long last, our worthy Secretary, voted numberless times the most ineligible bachelor in the Class, has stepped out of character and gotten himself married. It happened on October 25 in Harvard Church, Brookline, Mass., and the happy bride is the former Miss Frances Clark, a charming young lady from Brookline. Azel was, of course, unable to invite all the members of the Class to accompany him and his bride to the Chateau Frontenac to partake of the honeymoon, but he will be at home at 40 St. Paul Street, Brookline, after December 1, and will be glad to greet all his classmates then.

Here are some of the reactions of our classmates on hearing of A.'s venture — Gil Peakes: "I hope your coming excursion into matrimony will be very happy and successful, although belated." Al Sampson: "I had a swell time at our last reunion and am glad you have come, at last, to take this fateful step." Pirate Rooney: "Who'd ever have thunk it — that Azel would do a thing like this?" Sam Eisenberg: "At his age, Frances may be assuming a tremendous liability." Henry Sheils: *Censored*. It was the consensus of practically all the members of the Class who heard of the impending event that 1915 make a presentation of a gift on behalf of the entire Class, and a local committee in Boston sent out a letter to all classmates. It is hoped that the response will be 100 per cent, and if you haven't sent your check along yet, send it now to Mrs. Barbara E. Thomas, Room 4-354, M.I.T., Cambridge, Mass.

Now for some class matters not quite so joyous. San Willis was suddenly stricken and is seriously ill in St. John's Hospital, St. Louis. Word comes from Mrs. Willis that San is making a brave fight and is holding his own. Our best wishes to San for a complete and speedy recovery. His sense of humor has not left him for he wrote, "I'm not the one who needs sympathy from the gang in our Class. It's Azel — he's getting married." Mrs. Willis qualifies this by saying that after 30 years, marriage seems to her "not too tough an assignment."

It is sad to recall the report by Ken Kahn of the passing of Elwin P. Norberg, who died suddenly on September 6, in Winnipeg, Canada. He attended Stanford University and was graduated in Course IV with our Class. Our sympathy goes to his widow and family.

M. F. Coolbaugh, who retired this year as president of the Colorado school of mines in Denver, has been made president emeritus after 20 years of service. Frank Buckley joins the grandfathers' club; a grandson, Thomas G. Buckley, 3d, arrived on September 8, shortly after Frank's son, Thomas G. Buckley, 2d, returned from the service. In a recent issue of *Hygeia*, Jim Tobey has an amusing and interesting article, "Rats of Tizi-Ouzu," describing the frightful water and sanitary conditions in the town of that name in French North Africa, where Jim served with the Allied Military Government.

Gene Eisenberg '43, son of Sam Eisenberg, was married on September 23, to Shirley Helman of Brookline (Bryn Mawr, '45). The wedding was at the Belmont Country Club, and several members of the Technology faculty were present. Gene is dividing his time between building homes for veterans and teaching building construction at the Institute in Course XVII under Professor Voss '32.

Louis Young, as vice-president of the Gillette Safety Razor Company, in charge of production, deserves our thanks for the great job he and his organization are doing in bring to the world at large the broadcasts of all sporting events in every field. Keep it up, Louie. Ben Lassen of New York, was in Boston recently with his son, who is entering the Institute as a freshman. Johnny O'Brien is an official of the Veterans Administration in Boston at 17 Court Street. He has offered his services to any classmate who might have any business with the Veterans Administration.

Showing how strong the bonds are which exist between the Institute and its sons, Pellian T. Mar, an admiral in the Chinese Navy, has sent a very generous contribution to the Alumni Fund from far away China. Many thanks to the Admiral for his contribution and the thought which carried more than half way around the globe to say "hello" to his classmates.

At our reunion in Falmouth last June, the idea was expressed by many that our reunions are spaced too far apart, that we should hold them much oftener, every year, said some and at least every two years, others thought. The general feeling was that as we grow older our contacts should be closer and more frequent. We should like to hear from our classmates regarding this idea. It might be a good move to have informal reunions annually.

Our classmates might as well know that these notes have been prepared by a hastily contrived committee to pinch-hit for Azel, who is too busy collecting his trousseau and getting ready for the big doings. This committee wishes to extend greetings and good wishes individually and collectively to all members of 1915, and requests that you keep in touch with the Class and with one another, and, above all, don't forget to help Azel! — AZEL W. MACK, Secretary, 40 St. Paul Street, Brookline 46, Mass.

## 1916

The well-seasoned memory of our reunion makes pleasant recollecting even after so many months. Don't you find yourself recalling the picture we made wearing those Gordon creations, or laughing over the baseball game (six innings) with its five to three score — Frank Ross leading

the winning United States team and Tom Berrigan the vanquished New Englanders? How about Bill Farthing's keg of musty — that well-cherished item should bring a sheepish grin to more than a few faces? No small part of the fun were the prizes: Jap Carr's cookies; Bob Wilson's Amoco kit and razor blades; Steve Brophy's Scotch; Bill Farthing's bottle of the same; Jimmy Evans' coasters; Frank Ross's golf balls; George Petie's perfume; and Ralph Fletcher's birdbaths. Remember Jim Evans and the French melody and Barney Gordon's bass in "Ol' Man River." Willard Brown, Dutch Gaus, and Cy Guething were nominated as least changed, and Cy won by a narrow margin.

To prove our athletic prowess, Jap Carr and Steve Berke engaged in a tennis tournament with Izzy Richmond and Ryan of the Bay Lodge staff. Jap and Steve won, remember? Perhaps Bill Farthing's dash to the antique shop for an old reliable spigot comes under the heading of track entries. Typical of the '16 spirit was the arrival of Meade Bolton from Panama, where he has been stationed for 30 years. George Camp came from Mexico City; Kem Dean and Bill Leach, from Texas; Chuck Loomis, from Memphis; Dina Coleman, from Lexington, Ky.; Bob Wilson, from Chicago; and Arvin Page, from Winston-Salem. Speaking of George Camp, did you know that on his way up to the Cape he stopped in Tennessee to take flying lessons, won his pilot's license, and after the reunion flew back to Mexico City? He and your Secretary have been comparing notes on piloting. Letters and telegrams of regret were received from Vert Young, Ken Sully, Ed Clarkson, Dick Hunneman, Mortimer Favrot, Treddick Hine, Gene vanC. Lucas, Ping Loo, and John Hood.

In June, H. Mortimer Favrot wrote as follows: "I have received the various notifications regarding the reunion of the Class, also, the request that a brief record or accounting be given by each class member. It is scarcely likely that many will remember me, and certainly the small snapshot which is attached hereto should serve as an adequate disguise because I grew this moustache only after I left Technology and while in service on the Mexican border. I spent but one year at the Institute after graduation from Tulane and, being imbued in those days with a too-serious idea of accomplishing the impossible in a short space of time, I was little known outside the Department of Architecture and over at the Deke House. I did, however, attend a few smokers and remember some of the notorious characters such as Bill Farthing, although he doesn't remember me. Briefly, I served on the border in the Washington Artillery from New Orleans. After eight months I was disqualified with a touch of lung trouble. By the time I recovered, the rest of the boys had defeated the Germans, and I then proceeded to follow my profession. I grew up in my father's firm (Favrot and Livaudais) but took a flier on my own, during the Florida boom, in Miami. While there, I deprived the Miami *Herald* of one of its most gifted reporters, Helen Parkhurst of Indianapolis, who became my wife. Three children followed in due course, two boys and a girl. The old firm of Favrot and Livaudais evolved into Favrot and Reed with the death and retirement of

the senior partners. We have carried on a successful architectural business, decimated at times by wars and depressions; but it appears at present that there should be clear sailing for a few years. Ours is one of the busiest offices in the state, with a number of large hospital and educational buildings, theaters, country clubs, and department stores in the process of design. I see very few Technology men of our Class. In 1941, I made a trip west and spent an enjoyable two hours with Brute Crowell and Jack Hepinstall, who are the big contractors in Los Angeles. Don Parkinson '17 was also there, but he died on November 17, 1945. I occasionally see Arthur Shuey, who now lives in Shreveport, and I shall always remember the dinner at a downtown hotel in honor of Governor Walsh, when the sanitary engineers of our Class got so boisterous that the Governor took his departure. It was quite a party. I was glad to meet Esté Fisher at an American Institute of Architects convention a year or two ago and am always glad to meet old friends from Tech but regret my utter inability to be present at the class reunion. In conclusion, I wish you all a long and prosperous future and will make every endeavor to be with you, if possible, on the next occasion of your meeting."

From Riverside, Conn., comes the following message from John Hood: "Dear classmates, I am sorry not to be able to make the 30th reunion and wish to thank those who wrote me about it. I have been busier than a one-armed paper hanger, doing my regular work as a textile chemist with the American Cyanamid Company at Stamford, going out on police duty as a Greenwich Auxiliary (we have recently been placed on reserve), trying to keep juveniles out of court by teaching Sunday School, rehearsing for a concert given by a mixed chorus two weeks ago, dissipating one week of my vacation doing some necessary work about the house in the absence of any available labor, and giving my daughter away at her recent wedding. While my achievements along scientific lines are mediocre in comparison with those of Bob Wilson and others of our esteemed classmates, I think you will agree that I did not do so badly, with the assistance of my good wife, in the production of a very good-looking daughter. I know that all of you attending the reunion are to have a good time and hope to be able to make the 35th."

Dick Hunneman explains his absence from the reunion as follows: "I wish to apologize and much regret my inability to be in two places at once, but there is a conflict of dates, and I expect to put my boat in a 100-mile race off Marblehead that I have been in the habit of sailing in. I am probably doing the wrong thing and will miss being with you all on this big occasion. Best regards to all the boys, and a health to '16."

Ted Hine explained his absence from the reunion thus: "I am sorry I cannot be with you on the 30th — 30 years, it does not seem that long. I have been trying to figure a way to get down there, and I guess it is not to be. I must be in Connecticut in July and could not take the time for two trips. I have been with the Chrysler Corporation for about 12 years, handling their building construction. There has always been plenty



to do but right now the going is a little heavy: a large building program and no materials. As for myself, I am 100 per cent. I feel the same and look the same as 30 years ago. At least, that is what my friends say. Ask Phil Baker — he knows. I hope all you classmates are the same, and I wish you the best of luck and happiness for many years to come. I hope you will vote to award Paul Duff a quart of the best liquor obtainable for being so good at his home work. So, my best regards, and bend an elbow for me."

Those enjoying the two-day reunion were the following: Mark Aronson, Phil Baker, Joe Barker, Bill Barrett, Steve Berke, Tom Berrigan, Walt Binger, Meade Bolton, Steve Brophy, Ray Brown, Willard Brown, T. A. Bulifant, Bob Burnap, George Camp, Jap Carr, Dina Coleman, Bob Crosby, George Crowell, Theron Curtis, Kem Dean, Harold Dodge, Bill Drumme, Paul Duff, Jim Evans, Bill Farthing, Ralph Fletcher, Hovey Freeman, Jack Freeman, Dutch Gaus, Jeff Gfroerer, Al Giles, Barney Gordon, John Gore, Harold Gray, Howard Green, and Cy Guething.

Others who were with us were these: Maurice Holland, Frank Hubbard, Frank Hunt, Emory Kemp, Charlie Lawrence, Bill Leach, Chester Lewis, Al Lieber, Chuck Loomis, Jim McClure, Saul Makepeace, George Maverick, Herbert Mendelson, Joe Minevitch, Arvin Page, Ed Parsons, Dave Patten, George Petit, Lewis Pratt, Charlie Reed, Izzy Richmond, John Robertson, Frank Ross, Harold Russell, Hen Shepard, Francis Stern, Harvey Stocking, Peb Stone, Earl Townsend, Hy Ullian, Judd Vile, Nat Warshaw, Porter Webber, Don Webster, Ed Weissbach, Duke Wellington, Rusty White, Steve Whitney, Ted Williams, Bob Wilson, Johnny Woods.

Glancing through the September issue of *Food Industries*, we note that the Consolidated Biscuit Company in Chicago and the J. B. Carr Biscuit Company in Wilkes-Barre, Pa., have completed plans to consolidate into the Carr-Consolidated Biscuit Company. The new organization will be the fourth largest company in the cracker and cookie field. The J. B. Carr plants are located in Wilkes-Barre and Peoria, Detroit, and Greenwood, S.C., with one under construction in St. Louis. J. B. Carr will become president of Carr-Consolidated. — The American Society for Testing Materials lists John R. Freeman, Jr., on its executive board.

Still another active 1916 man is Steve Brophy, who served as chairman of the public relations committee of the National War Fund, Inc. This was the organization which rendered such service during the war years. It was responsible for the United Service Organizations, the Merchant Marine "home away from home," the War Prisoners' Aid, foreign relief of all kinds, and countless other good works. In his report to the directors, the President, Winthrop Aldrich '37, listed Steven's name with those men for whom he personally had "a feeling of gratitude and admiration impossible to describe." — RALPH A. FLETCHER, *Secretary*, P.O. Box 71, West Chelmsford, Mass. HAROLD F. DODGE, *Assistant Secretary*, Bell Telephone Laboratories, 463 West Street, New York 14, N.Y.

## 1917

Jack Wood is back again in charge of the M.I.T. Navy on the Charles. There is great rejoicing on his return, and there probably never was a time with greater opportunity for help such as he can give the problem of extracurricular activities and interests at the Institute than this year, when the factors of swollen attendance and limited facilities are serious. Jack's contribution will therefore be unusually important in the immediate future.

George Warren Smith '26 has made a thorough study of possible arrangements for the M.I.T. group in Boston at least comparable with M.I.T. clubs in other cities in its offering to local Alumni. He has made arrangements with Thompson's Spa for a special luncheon room at the main Spa on Washington Street, this room to be open each weekday and held exclusively for Technology Alumni. It has been suggested that members of various classes make a special effort to attend on dates ending with the same figure as their class; in other words, 1917 men will have a greater chance of finding classmates there on the 7th, 17th, and 27th of each month. Up to the present your Secretary has been unable to be present as frequently as he had hoped but on one recent occasion did find Chester Ames of the New England Telephone and Telegraph Company, who came in on that particular day.

A note from the ever faithful Charlie Locke '96 says that Philip N. Rowe writes that he and Mrs. Rowe reached India on February 5 and then sailed homeward on March 20. They saw many old friends and had a most interesting six weeks, visiting mostly in the interior. But since his return, he has been kept extremely busy by his one-man business. — Kenneth Bell tells us that Dudley Holden is now living in Wolfboro, N.H., and travels in New England as sales representative for the Newton Company of Cambridge. — Leon McGrady hove in town early in October, enthusiastic about reunion plans for next year. He plans to see Win McNeill in New York soon. Penn L. Carroll, at the Naval War College in Newport, now holds the rank of commodore.

The summary of returns on the Fund shows that we are improving in the number of contributors. The percentage of the quota assigned to us is higher than that of any near-by class. This is as it should be. The amount is not so high as might be wished, but it is to be assumed that this is a matter controlled by individual circumstances and not one on which we care to bring heavier pressure than an urge to give Technology every possible break at a time when its opportunities and needs are so great. — RAYMOND STEVENS, *Secretary*, 30 Memorial Drive, Cambridge 42, Mass. PHILIP E. HULBURD, *Assistant Secretary*, Phillips Exeter Academy, Exeter, N.H.

## 1918

I may be a little late in telling you of the group which attended the Alumni Day Banquet but here goes: Carlton Tucker, Eli Berman, Tom Brosnahan, who came over from New York, Julian Leonard, Tom Kelly, Lester Conner and his wife, Bill Wills, Max Seltzer, and your Secretary. Many of this group were able to be around

for all the activities of the day, but a few of us had to wait and join the party in the evening.

Pete Sanger announces that he became a grandpapa on August 5, with the arrival of Robert Luther Neff, Jr. He also wishes it known that he has moved from Old Greenwich to Scarsdale and now resides at 740 Old Army Road in that town.

A clipping from *World Petroleum* makes the following announcement: "Philip M. Dinkins of the American Cyanamid Company, has been made president and a director of Jefferson Chemical Company, Inc., organized by the American Cyanamid and the Texas Company to produce chemicals from petroleum and petroleum gases. Its first plant, now under construction at Port Neches, Texas, will produce intermediate chemicals used in the synthetic rubber, plastic, textile, and other industries." Good work Phil and good luck!

How time does go by. Back in 1940, when Mrs. Lindbergh was writing about *The Wave of the Future*, few of us realized the degree to which our lives would be affected by whatever it was she was writing about. Certainly the dictatorial wave was not the desired wave of the future. Certainly there was no new economic or social force that had been discovered by the dictators. Certainly their so-called future had more of the up-and-down oscillations of the rope to it than of the trochoidal action which characterizes a wave. And what it did to us compares favorably with the more violent aspects of a ready-mix-concrete truck in transit. The shaking up of the little sands of time in our individual lives has a peculiar fascination because, as the mixer turns over in transit, we glimpse only fleetingly what happened to the classmates.

Take Jim Flint, for example. By dint of having deserved through his superior scholarship the backing of Eddie Miller (late and much lamented head of Course II), during the first world war Jim was a young lieutenant in the Navy doing research on torpedo design. For a while after that he ran his father's machine shop in Denver. Then he disappeared somewhere among the Buckeyes of Ohio to emerge in 1942 as a lieutenant commander in naval ordnance. Twice more the old concrete mixer of earth whirled its burden of grief around the sun. In 1944, Jim was a brass hat with three stripes on his sleeve, but before the year was out he was Captain Flint, U.S.N.R., at the Naval Ordnance Plant, Forest Park, Ill. What then? We don't know, but troubled in mind as to what war can do to a talented person, we dispatched a scout to the Alumni Office in search of Jim's present address. From the resulting information we conclude that when he got out of harness, he fled to 320 Ranch, Gallatin Gateway, Mont., whence inquiry should be addressed for a more personal account.

Richard Smith is about to be shaken up by that same concrete mixer. The war further evaporated the oceans, contracted the land, and intensified the air. Consequently, Brazil intends to keep up with the parade by establishing a cluster of schools — an aeronautical engineering school, a school of air commerce; a flight training school, and so on — in São Paulo. This, our atlas says, is 220 miles west-southwest of Rio. Here, on land selected by Richard

Smith, who is to head this \$10,000,000 endeavor, buildings are being erected and fields readied. Instruction is to be in English, so our intelligence service informs us, but Smith is learning Portuguese anyway, just in case he should need to speak to an air transport hostess, or some young squirt on his staff should mutter an ill-considered response in his mother tongue. Smith resigned his professorship in the Aeronautical Engineering Department of M.I.T. and soon sails south of the equator with Mrs. Smith, leaving in the States two married daughters and Junior, who is also at present an M.I.T. junior. "*Boa sorte*," Richard.

The final shaking up to be recorded in this listing is that of Maurice E. Gelinis, who has lately been appointed instructor in the engineering department of the Lowell Textile Institute. After getting a B.S. from Technology in 1918, Gelinis got an A.M. in mathematics from Harvard University. He taught two years at the University of New Hampshire and 24 years at Hibbing Junior College in Minnesota, where the young hopeful gaped in wonderment or slept serenely — as the case might be — while Maurice taught mechanical drawing and descriptive geometry. Before the 24 years were over, he achieved a nice nonchalance in turning his back on the class while drawing on the board, which trick is not so easily accomplished by those who are new at teaching. Did you ever try it?

As to the electric organ we aspired to give the glorious Institute as a 25th reunion present back in 1943, Professor Hudson still counsels, "Wait, you'll get twice as much for your money by being patient a little longer." Perhaps it will be available by our 30th reunion. Anyway, the fund draws interest as time goes by. — GRETCHEN A. PALMER, *Secretary*, The Thomas School, The Wilson Road, Rowayton, Conn.

## 1919

Al Richards has asked to have publicized in our Review notes the upstairs room at the Washington Street Thompson's Spa in Boston reserved for Technology Alumni daily during the lunch hour from 12:00 to 1:30. It is for the use of those living in Boston as well as those who are visiting.

William J. Farrisee, professor of civil engineering at Clarkson College of Technology, Potsdam, N.Y., has been appointed dean of men. The following passage is from the release from Clarkson College concerning his activities since his graduation from the Institute: "His college course was interrupted by his enlistment in the Army Air Corps during World War I. After serving one year as instructor in the general engineering drawing department at the University of Illinois, he came to Clarkson in September, 1922, as an instructor in the civil engineering department. He received his master's degree from Clarkson in 1931. Professor Farrisee has been intimately associated with numerous extracurricular activities and sponsored the founding of many student organizations, including the Varsity C Club, the student chapter of the American Society of Civil Engineers, and Phalanx, senior honorary society. He has been secretary of the Athletic Board of Control for 23 years, as well as director of public relations. He is a

member of Lambda Iota Fraternity, Tau Beta Pi, national honorary engineering society, and a professional engineer, licensed in New York state. He is past president of the Potsdam Rotary Club and chairman of the board of trustees of the Presbyterian Church. In July, 1944, he became executive secretary of the Clarkson Alumni Association and under his direction the first alumni magazine was edited. During the past year, he has been detached from his faculty status in order to assist in the promotion of the \$1,140,000 Clarkson endowment and expansion campaign, a project well on its way to a successful consummation. Professor Farrisee will assume his new duties on July 1."

Roy Burbank writes, "I am sorry I haven't any news that would be good for the class notes. My work and other doings haven't changed for quite some time, but I'm looking forward to the next Review to see what I can find in it." — Jack Braverman has been promoted to the position of secretary of his corporation, the Empire Corrugated Container Corporation, Brooklyn, N.Y. — Thomas H. Bort, Jr., has been elected a member of the executive committee of the Massachusetts Bankers Association and vice-chairman of the public relations committee of the National Association of Mutual Savings Banks. He has also been elected chairman of the public relations committee of the Massachusetts Savings Banks Association and president of the Beverly Council of Churches. — Paul Blye writes: "There is nothing new to report. We at the Bell Laboratories are gradually getting back to the telephone business after five tough years."

Al Richards also writes from Charlotte, N.C., where he spent a few days, "I haven't written you recently because I've had no class news to report. Last week, however, at the 'general mixer' at the American Chemical Society meeting in Chicago, I met George Bond, Jr., who is with Houdry Process. We had quite a chat. The next day at the M.I.T. luncheon, I saw him again and also Ben Sherman from our Class. I didn't have much opportunity to talk with Ben, but he certainly looked fine. I hope we can get together sometime in New York for a short chat." — EUGENE R. SMOLEY, *Secretary*, The Lummus Company, 420 Lexington Avenue, New York, N.Y. ALAN G. RICHARDS, *Assistant Secretary*, Dewey and Almy Chemical Company, 62 Whittemore Avenue, Cambridge 40, Mass.

## 1920

Our plea for news from those who attended the reunion last June hasn't yet brought forth much response. We did get welcome words of appreciation from Harold Bibber at Union College, Schenectady, and from Chick Dana, whose office address is 295 Madison Avenue, New York. We are also pleased to hear from Larry Winant and Pete Ash.

Foster Doane's present address is 16 Lincoln Avenue, Glens Falls, N.Y. Buz Burroughs has resumed his connection with the Dexter Folder Company and is at Pearl River, N.Y. Arthur Dopmeyer is now a colonel, and his address is 1407 United States Appraisers Building, San Francisco. Rear Admiral Arthur C. Miles is on the staff, Comairpac, care of Fleet P.O., San

Francisco. Bill Schimmelpfennig is still in Puerto Rico, address San José Apartments, 2, Calle Taft, Santurce, P.R.

A lot of you fellows should be grandfathers by this time; but for all I hear, you must be exceedingly ashamed of it. If not, how about telling your classmates, or if your children are still in school or college, tell us about them. In other words, don't be so shy with personal news. You like to read it. How about supplying some of it? — HAROLD BUGBEE, *Secretary*, 7 Dartmouth Street, Winchester, Mass.

## 1921

You fellows certainly have been good to me in supplying a quantity of news at the reunion and since that time, and I hope you will not be too impatient if several issues are required to give all the items the adequacy they deserve. This is not to be interpreted, however, as releasing you from the continuing obligation to send in more news. When you get out that Christmas list, include a note for your Secretary.

To John W. Barriger, 3d, congratulations on his election as president of the Chicago, Indianapolis and Louisville Railway, popularly known as the "Monon." Jack has had a distinguished record of service in the railroad field from his early days with the Pennsylvania to his wartime duties in the Office of Defense Transportation and most recent affiliations as manager of the railroad division of Fairbanks Morse and Company and vice-president of the Union Stock Yard and Transit Company of Chicago. His new headquarters are in Chicago at 608 South Dearborn Street, and he makes his home in Glencoe, Ill. His older son, Jack, Jr., was a student at Technology and is now in the Navy. Betty, Ann, and Stanley attended the Alumni Day activities with Jack and Mrs. Barriger.

S. Murray Jones, formerly executive assistant to the electric and steam sales manager of the Boston Edison Company and head of the technical service division, has been appointed sales manager of the electricity and steam divisions. — We welcome to the fold Elliott G. Peabody, who has recently changed his class affiliation. Elliott is sales manager of the Citizens Gas and Coke Utility of Indianapolis and president of the Indiana Association of the M.I.T. — Walter C. Sadler has returned to Ann Arbor and resumed his duties as professor in the engineering department of the University of Michigan. During the war period he was an Army lieutenant colonel. Glenn H. Easton, recently a commander in the Navy, has returned to the same university to take up his former professorship, also in the engineering department. — Among recent promotions announced by the services is that of Henry R. Oster, who has been made a commodore. Lewis W. Moss has been promoted from the rank of major to that of lieutenant colonel.

Edward M. Craig, Jr., has left upstate New York to join the board of water supply in New York City. Harold F. Stose is with Radio Inventions, Inc., in New York and makes his home in Upper Montclair, N.J. Joseph H. McEvoy writes that he has recently returned from an extended visit to Mexico in connection with his consulting engineering practice. Joe sent in his reunion questionnaire, giving his address as 202 McGowen Avenue,



Houston 6, Texas. Active in local alumni circles, he is secretary of the Technology Club of Southern Texas.

Robert W. Haskel wrote Ray a note of apology for nonattendance at the reunion. Here's what he says he accomplished during that week end: Sold his Claremont, N.H., home and bought one in Needham, Mass.; sold his former business, Robert W. Haskel and Associates, fire protection engineers, and became a member of the firm of Standard Chemicals, Inc., Natick, Mass., manufacturing chemists concerned with fuel oil, feed water treatment, cleaning agents, and special oils.

A note of thanks from William J. Sherry, Tulsa, Okla., oil producer, particularly expresses his appreciation of the opportunities which were extended to Billy, Jr., to participate in the reunion. We, in turn, deeply appreciate Bill's friendly gesture to better our golf, in the form of a book of pointers for participants of advancing age. The subtleties of his selection are especially enjoyable because the subject used to illustrate the volume has marked similarity to our own considerable avoirdupois, unprofessional form, and lack of hirsute adornment.

Henry G. Dooley, of Tech Show fame, has broken years of silence with a cheery greeting on the stationery of the Pelican Club Apartments, Hendricks Island, Fort Lauderdale, Fla., enclosing a photograph of that garden spot to prove that California can't do it any better. Mercury reports that he served four years in the war and retired as a commander in the Naval Reserve. He is one of a local group forming a consulting engineering firm. In 1937 he married the former Charlotte Dew Clarke of Virginia.

Howard F. MacMillin has been elected vice-president of Bryant Machinery and Engineering Company of Chicago. Howard has long been associated with the design, development, manufacture, and application of hydraulic presses, and he will direct the Bryant Company's activities in this field in addition to his executive duties. Howard was formerly president and general manager of the Hydraulic Press Manufacturing Company and in the last year he has carried on a special assignment with Arthur D. Little, Inc.

A. Warren Norton was re-elected president of Press Wireless, Inc., and also of Press Wireless Manufacturing Corporation at a recent meeting of the directors of both organizations. Augustus B. Kinzel has been elected one of the new directors of the American Institute of Mining and Metallurgical Engineers. James R. Cudworth has assumed his duties as dean of the college of engineering of the University of Alabama. Boris V. Korvin-Kroukovsky has been appointed a research professor in fluid dynamics at Stevens Institute of Technology. Herbert A. Kaufmann is director of development and research for the American Molasses Company of New York. Arnold C. Vardon, formerly assistant to the director of the Pasteur Institute of Medical Research, Shellong, Assam, India, has retired, and he and his wife have settled on a small farm in New Zealand, where his address is R.M.D., Upper Monterey, Nelson District.

Colonel Dodston Stamps of the United States Military Academy and Mrs. Stamps, have announced the marriage of their

daughter, Dorothy, formerly an ensign in the WAVES, to Captain Charles Daniel, U.S.A. Our sincere sympathy is extended to Robert R. Thurston on the recent passing of his father.

Charles H. Herty, Jr., assistant to the Vice-president of the Bethlehem Steel Company and President of the American Society for Metals, has spoken at a number of local chapters of the latter organization. He recently presented a paper on "Steel Making Practice as it Affects Properties of Interest to the User." At the summer convention of the American Institute of Electrical Engineers in Detroit, John A. Scott of the General Electric Company collaborated in the presentation of a paper on the "Short Time Current Ratings for Aircraft Wire and Cable."

Daniel Noce, a major general, organizer of the amphibian engineer brigades of World War II, has been named chairman of a committee to form a nationwide association of veterans of the six special brigades that saw action in the European and Pacific theaters from North Africa to the end of the war. Thanks to Wally Adams for sending in an informal snapshot of Dan Noce, Moose Le Fevre, and your scribe discussing serious problems on the steps of East Bay Lodge. Robert F. Miller, 1883 Langerdale Boulevard, South Euclid 21, Ohio, curator of our photographic collection, has asked that all films and photographs taken at the reunion be sent to him for inclusion in the record.

In closing this quarter-century anniversary year, best wishes to you all for a very merry Christmas and a happy New Year. —CAROLE A. CLARKE, *Secretary*, International Standard Electric Corporation, 67 Broad Street, New York 4, N.Y.

### 1923

A number of items beside those reported last month have come in to cover events of the past summer. Ralph Rubins has relayed, through Professor Locke '96, the information that he left Chicago at the end of July for Okinawa, where he will be working in a civilian capacity as an engineer on an important project for possibly two or three years or more. His address is, care of District Engineer, A.P.O. 331, San Francisco.

A clipping from the Panama, R. P., *Star and Herald*, in July, tells of the arrival on the isthmus of Walter F. Christmas to be superintendent of the mechanical division of the Panama Canal. Captain Christmas was on duty with the Bureau of Ships, United States Navy, in Washington from 1938 to 1945, when he was made supervisor of shipbuilding at San Pedro, Calif., from which station he went to the Canal. His family consisting of his wife and two sons, Walter, Jr., 13, and Lawrence, 10, were to join him from Washington, D.C.

Another Washington item, from the Washington *Star*, in August, reported that Joseph D. Arthur, Jr., assistant engineer commissioner of the District of Columbia, would leave that post for a civilian job as harbor commissioner for the City of Baltimore. Colonel Arthur makes his home in Washington. He is married and has four children.

H. S. Davis has been general manager of the Conowingo Power Company, at Elkton, Md., since 1943. In July, he was ap-

pointed manager of the eastern division of the Philadelphia Electric Company, with headquarters at Jenkintown. Davis was superintendent of the T. and D. Underground Division of the company in 1928, and before taking charge of the Conowingo Power Company, was superintendent successively of the Delaware and Schuylkill divisions.

Your Secretary is the editor of a book published in October by the National Fire Protection Association and entitled, *Fire and the Air War* (276 pages, \$4.00). This is a series of technical papers on the fire destruction in the air attacks on Germany and Japan and an appraisal of the fire protection engineering problems of defense. —HORATIO L. BOND, *Secretary*, 457 Washington Street, Braintree, Mass. HOWARD F. RUSSELL, *Assistant Secretary*, Improved Risk Mutuals, 60 John Street, New York 7, N.Y.

### 1924

A note from Bill Robinson, which should have appeared here months ago, reports that Dick Chapin '26 is in charge of construction and maintenance for Marshall Field's operations in Chicago; that Marshall Waterman has joined the staff of the Electrical Testing Laboratories in New York; and that Phelps Meaker has rejoined the engineering division of General Electric after his war service in Washington. A recent feather in the 1924 cap is the appointment of Tom Sherwood as dean of engineering at the Institute.

News clippings from various papers give a quick glimpse at the activities of the following: Tom Coogan, elected president of the M.I.T. Club of South Florida; Kenneth McDonald, appointed to the faculty of Snead Junior College at Boaz, Ala.; John B. Gegan of Providence, awarded the Croix de Guerre for "exceptional service in the liberation of Paris"; Bill Delehanly, of the New York architectural firm of Chapman and Evans, married at Elizabeth, N.J.; Sarkis Zartarian, former assistant attorney general in Massachusetts, awarded a master of laws degree by Boston University; Charley MacBrayne elected vice-president of the Matthiessen and Hegeler Zinc Company; Silvio Massari, awarded the Legion of Merit for "his outstanding contribution . . . in the Chicago Ordnance District"; Denton Massey, returned to Toronto from the Royal Canadian Air Force; Phil Bates, moved to Santa Monica with the westward trek of the United Drug Company; Paul Schreiber, addressing the scientific section of the Toilet Goods Association on "Skin Protective Preparations Issued by the Quartermaster Corps"; Lachlan MacLean named Boston sales office manager of the Dampney Company; Ralph Alden, vice-chairman of the Democratic City Committee, appointed to the board of public works in Springfield, Mass.; Bert Donkersley, chief engineer of the Grinnell Company in Providence, entering his daughter at Wellesley.

Of interest is the preliminary work which George Parker and Cy Duevel are doing in connection with plans for our 25th reunion and for the class gift to be made at that time. You'll be hearing from them about it.

Two deaths of well-known members of the Class are reported with regret: on July 25, that of Ernie Hosbach, who — we be-

lieve — had been an engineer with the Massachusetts public works department for many years; and on May 18, that of Baird Snyder, 3d, assistant Federal Works administrator, and previously chief engineer of the Farm Security Administration and deputy administrator of the wage and hour division of the Department of Labor. — FRANCIS A. BARRETT, *General Secretary*, 234 Washington Street, Providence, R.I. GEORGE W. KNIGHT, *Assistant Secretary*, 36 Arden Road, Watertown 72, Mass.

## 1926

Members of the Class who are still in the armed services continue to change their base of operations. Carlyle L. Helber, an Army captain, has gone from Alameda, Calif., to Wright Field, Dayton, Ohio, where he is general representative for the Office of the Bureau of Aeronautics. Robert W. Rogers, a lieutenant colonel, formerly located in Alexandria, Va., is now in Barrington, R.I. James E. McInerney, now a colonel, is at Fort Wayne, Detroit. Ralph H. Roberts, a Navy captain, has been transferred from the Bureau of Personnel to the Bureau of Ordnance.

On October 1, Chester F. Buckley became works manager of the Taunton, Mass., division of the National Silver Company. Until taking this new post, Buckley was manager of the Taunton Municipal Lighting Plant. Dick Whiting is with Spencer, Marzall, Johnston and Cook in Chicago. Ariel F. Horle, who has been with American Smelting and Refining in Mexico, is now at the company's El Paso, Texas, office. B. E. Morriss, formerly with the Tennessee Valley Authority in Knoxville, is at present in Richmond, Va., with the Virginia State Planning Board.

Letters have gone to members of the Class requesting vigorous support of our Class Endowment Fund. A committee under the aggressive leadership of Eben Haskell and with the enthusiastic support of our President, Dave Shepard, is undertaking a program looking toward a class gift of \$100,000 at the time of our 25th anniversary. The Secretary believes that this is a wholly feasible objective, and he is proud that the Class of 1926 is setting an example for other Institute classes in thus seeking to provide a major addition to the Institute's resources. — JAMES R. KILLIAN, JR., *General Secretary*, Room 3-208, M.I.T., Cambridge 39, Mass.

## 1927

The opening gun has been fired for preparations for our 20th reunion. On October 1, our President, Jim Lyles, went to Boston and had a meeting with Bob Wise, Alf Berle, Ralph Stober, Judas Priest, and Dyke Arnold. The result is a line-up of the reunion committee which promises to be the final line-up, although there may be a few last-minute changes: general chairman, Ezra Stevens; vice-chairman, Dyke Arnold; treasurer, Joe Burley; chairman of entertainment, Bob Wise; chairman of location committee, Ralph Stober; chairman of publicity, Jim Chirurg; chairman of publication, Alf Berle; chairman of sports, Glenn Jackson; and chairman of transportation, Judas Priest. In addition to the above committee, there will be local chairmen in various cities and areas who will undertake the job of following up on the

men in their general vicinity, as follows: New York, Bob Bonnar; Providence, Wheat Hutchison; Philadelphia, Dan Metzger; Cincinnati, Tom Russell; St. Louis, Frank Mesker and George Bergman; Toledo, Pub Whittier; Pittsburgh, Bill Reed; and New Bedford, Jim Henry. There will be a letter giving you all the preliminary plans and asking for suggestions. The locale will be somewhere east of New York, and the committee is going to pick an absolutely first-class place. The date will be a week end prior to the Technology graduation, which will be about the first week end in June. It all looks as if a great many of us will want to be there.

Bill Field Sadtler is in Yokohama, and we were certainly glad to receive a letter concerning the picture on that side of the world. Those wanting to write him may address him as Colonel William Field Sadtler, in care of Ordnance Section, Headquarters, Eighth Army, A.P.O. 343, in care of Postmaster, San Francisco, Calif. His letter follows: "Among matters of interest, the most amazing is the complete acceptance by the Japanese of American control. Their home army and their China armies were unbeaten. But without a single flare-up they have been disarmed and demobilized by a few divisions of our Army. Pictures fail to convey how hard hit their big cities were. We used fire more than explosives, so that the prevalent wood constructions simply disappeared. The devastation stretches for miles. But the bombing was amazingly accurate so that docks, railroads, and the like were kept for our use. I am presently ordnance officer of the Eighth Army. Now that the shooting is over, the job is mainly to keep running some 25,000 vehicles and to take care of many thousands more in storage. These are headaches!"

Deke Crandell was spotted the other day. He is still engineering for the Liberty Mutual Insurance Company in Boston and living in Wellesley Hills. — We have received word of the death of three of our classmates although in no case have we any further details. They are as follows: Frederick W. Keith, on April 29; Hugh B. Carter, Jr., on May 17; and Harry B. Cuthbertson, a lieutenant colonel, on December 12, 1945. Possibly some of the class members will write us if they have any further information. — JOSEPH S. HARRIS, *General Secretary*, Shell Oil Company, Inc., 50 West 50th Street, New York 20, N.Y.

## 1928

Malcolm O. Petrie, an Army captain, died as a prisoner of the Japanese. He was awarded the Silver Star posthumously by General MacArthur for continuous and conspicuous gallantry in action from December 8, 1941, to May 6, 1942. The Class extends its sincerest sympathy to Mal Petrie's family and friends.

We have recently learned that Leopold de Beer, who obtained his master's degree with our Class, was executed by the German Gestapo at Dortmund on June 4, 1943. He was arrested in Mons, Belgium, on April 1, 1942, at the Faculté Polytechnique de Mons, where he had been a professor of mechanics. He had also worked as a volunteer for the Allied armies in the "underground." The war's wounds cut deeper than we knew.

Dennistoun W. ver Planck, a commander, was among United States naval officers who received an award as honorary member of "The Most Excellent Order of the British Empire." The presentation was made in Washington by Lord Halifax and read as follows: "Cdr. Ver Planck was working on degaussing in the U.S.A., more especially in regard to theory, ranging procedures, operating instructions to ships, transfer of range records from one country to the other and all matters of unification of policy. It was due to his very co-operative and helpful attitude that it was possible so to unify policy and standardize instructions that all ships, irrespective of nationality, were handled on essentially the same principles and given identical instructions regardless of the country they were ranged in. His services were of the greatest value to Great Britain."

Early this year the Legion of Merit was awarded to C. W. Newhall, Jr., a colonel in the Air Reserve. The citation read as follows: "Colonel Charles W. Newhall, Jr., Air Corps, Army of the United States. As chief of the aircraft distribution control branch, headquarters, Army Air Forces, during the period from September, 1941, through November, 1945, Colonel Newhall made a contribution of major importance to the matériel program in the establishment of a comprehensive aircraft distribution and inventory control system within the Army Air Forces."

Dick Roth has been put on inactive duty with the rank of lieutenant commander in the Naval Reserve and has received the award of the Bronze Star. The citation given Dick reads: "For exceptionally meritorious service in connection with forward base development at Manus, Admiralty Islands, during the period of 14 April 1944 to 5 November 1944. Through his excellent knowledge of engineering, his special qualifications of leadership and organization, he was able to complete the construction of the supply depot and numerous storage facilities within the comparatively short time allowed by the higher echelon. He accomplished his duties despite extreme adverse weather conditions and inaccessibility of necessary supplies. In addition to his regularly assigned duties he was able to assist other units at the base in the construction of utilities necessary for the proper functioning of the base. His exemplary conduct and unswerving devotion were at all times in keeping with the highest traditions of the United States Naval Service." Dick now has his second offspring, a boy, and is back practicing architecture with his father and brother. He admits it's rather depressing because it is all planning and no building these days.

Ellis A. Johnson, a commander in the Naval Reserve who was with the Naval Ordnance Laboratory, Washington, D.C., has received the Distinguished Service Medal "for his tireless and sound efforts in initiating the early and critical organization and development facilities of the laboratory and successfully introducing many scientific ideas into underwater naval warfare, both offensive and defensive."

Fritz Rutherford, a major, has returned to civilian life after four and one half years of active duty with the Detroit Ordnance District. He was chief of the production section of the ammunition branch and re-



sponsible for the production of all types of ammunition, involving an expenditure of many millions of dollars. For his achievements he was awarded a certificate of commendation. Before his entrance into the Army in 1941, Fritz was chief engineer at the Detroit Brass and Malleable Works in Detroit. He will now assume new duties at the works as general production manager of both Detroit plants.

Urban Niblo spoke recently before the Dallas Kiwanis Club, urging passage by Congress of the Selective Service Act extension. General Niblo participated in the landing in Africa and Sicily and the campaigns in Italy and Austria and was bound for Manila when the Japanese capitulated. — Abe Woolf now has his office for general and architectural engineering at 27 School Street, Boston. He recently gave the main speech, illustrated with lantern slides, before the Boston Society of Civil Engineers on the topic "Factory Roofs." — Bill Hurst broke out in print again in the American Institute of Mining and Metallurgical Engineers publication, *Petroleum Technology*, with a learned and beautifully diagrammed article on the "Performance of Distillate Reservoirs in Gas Cycling." Congratulations to Bill, who is exploitation engineer for Shell Oil at Houston. — Speaking of Shell Oil, Jim Morse has been appointed operations manager of Shell Oil Company's Cleveland, Ohio, division. Before the war Jim was operations manager for Shell in Detroit; then Uncle Sam took him on up to the rank of lieutenant commander (he had specialized in aeronautical engineering) and before his latest promotion he was again working for Shell in New York. — J. K. Roberts is now general manager of research for the Standard Oil Company of Indiana.

Did you know that M. Waldo Keyes, a lieutenant commander in the Naval Reserve, and Mary Agnes Holbrook were married? Des Shipley, pilot for the American Airlines and a captain in the Army Air Corps Reserve, was married this past June to Nathalie Reeves Howie at New Rochelle, N.Y. Few bachelors remain at the end of the 18th round! And hats off to Art Josephs of 300 East Michigan Avenue, Duluth, who is the proud dad of a new baby girl.

The interesting excerpt below is taken from a letter sent to Ralph Jope by John Houppis from Bikini Atoll. John is a commander in the Naval Reserve with the Electronics Instrumentation Office and was aboard the U.S.S. *Avery Island* when this letter was written: "I came out here more than two months ago, one week after the evacuation of the natives. I am heading the Electronics Instrumentation Group, which is concerned with the installation and operation of radar, television, sonobuoys, echo-sounding, telemetering, remote control, and so on, for the measuring and recording of various physical aspects of the bomb blast and its aftereffect. It's the most interesting job I have had in my naval career. I wouldn't have missed it for the world. The islands here are semidesolate. The only evidence of human habitation is a few bare native huts and a small cemetery, the graves of which are decorated with empty sake bottles. Some 140 of them lived, I understand, on coconuts and fish. The only drinking water they had was that

which they could collect in concrete cisterns during the rainy season. Some days it is pretty hot, the temperature running up to 110 degrees F. If it had not been for the low velocity breeze, which blows constantly, life would have been unbearable."

Walter Hildick has recently been made vice-president in charge of manufacturing of the Nashua Manufacturing Company. — Ed Hartshorne is now assistant research director for the Western Cartridge Company in East Alton, Ill. He has been with the company since 1934, is married and has two children. — Stan Humphrey has been admitted as a partner of Booz, Allen and Hamilton, management consultants. Before joining the firm, Stan was with Sylvania Electric Products, Inc. — John C. Leslie has again been promoted — this time to the position of vice-president on general duty — by Pan American Airways. His office is on the 58th floor of the Chrysler Building, and among other responsibilities, he is working on publicity for Pan American's new coast to coast "pursuit speed" airliner service, which will begin around January 1, 1947, with Republic Rainbow planes.

Your Secretary recently emerged from a complete reorganization (under the new management at Lever Brothers Company) as manager of Rinso and Lifebuoy advertising. Also, Mrs. Chatfield and I have just returned from a very interesting, but all too short, week in Bermuda at "Horizons" and the Coral Beach Club. We flew over and back in the British Overseas 43-ton, 55-passenger Royal Mail Aircraft *Berwick*. The flight takes five hours from Baltimore and is very interesting and luxurious. Service is the byword because the planes are slower than the American Constellations. Even the very British steward was engaging as he demonstrated putting on the life jacket — "We have to do this, you know. However, don't worry — we shan't get you wet!" — GEORGE I. CHATFIELD, *General Secretary*, 6 Alben Street, Winchester, Mass.

## 1929

We note among recent discharges from the armed forces the names of the following class members who have shed their uniforms to return to civilian pursuits: Lieutenant Colonel George A. Crandall, who can now be reached at Box 86, Tolland, Conn.; Lewis R. Aldrich, Jr., a technical sergeant, Box 2128, Billings, Mont.; Major David H. Wilson, 11 Bromfield Street, Watertown, Mass.; Captain Fred E. Mason, 127 Northeast First Avenue, Miami, Fla.; Lieutenant John B. Ellsworth, Boston Edison Company, 39 Boylston Street, Boston 12, Mass.; Captain Alexander L. H. Darragh, 5836 North Wayne Avenue, Chicago 40, Ill.; Major Theodore S. Alexieff, 1310 Wall Road, Webster, N.Y.; Major John P. Walsted, 5728 North Williams Avenue, Portland 11, Ore.; Commander B. King Couper, Tryon, N.C.; George W. Burgess, Hawaiian Pineapple Company, Honolulu, T.H.; Lieutenant Raymond H. Shriver, P.O. Box 33, Bellwood, Pa.

Lieutenant Shriver had a particularly interesting career as a result of a hobby begun while at the Institute. At that time he developed an interest in the Japanese language which he pursued entirely on his own, being unable to engage in any formal

study. He originally enlisted as a private in the Army, rose rapidly, and was given special courses for officers who were being trained for active service in the Pacific area. He was commissioned a lieutenant and left for a Pacific assignment in October, 1944. From that time he served with the Navy as Japanese language officer, participating in the Okinawa campaign and the surrender of the Marshall Islands.

It is with regret that I have to report belatedly the deaths of Bill Houck and Os Karas. Os died on November 26, 1945; Bill, in August, 1943, while serving in the Navy as a lieutenant. We all hold many fond memories of these two grand boys.

Warren W. Walker was recently elected president of the Montclair, N.J., Society of Engineers, an organization with more than 600 members, of which he had been a member for 10 years, serving as secretary and vice-president. Warren, formerly production manager of Weston Electrical Instrument Corporation in Newark, is now president of the Graphite Metallizing Corporation of Yonkers, N.Y. Among his other activities, he is a director of the Yonkers chamber of commerce and the National Metal Trades Association, and a member of the American Institute of Electrical Engineers, the National Association of Cost Accountants, and the Westchester Personnel Association. What do you do in your leisure time, Warren?

Your Secretary ran into Art Marsh for only a handshake and a "howdy" at the Montreal airport in September. Art was carrying his weight well and appears to be weathering the storm better than most of us. — We have received notice of the appointment of Lincoln Reid to an associate professorship of hydraulics in the school of civil engineering at Cornell University. He comes to this post by way of four years with the Federal Bureau of Reclamation, followed by a year of teaching at the College of the City of New York. Since 1943, he has been an officer in the Army at West Point.

In your Secretary's own bailiwick, Dick Piez, who had been located at our Oakland, Calif., plant for the past 15 years, has been transferred to our main office in Cambridge, from which he will travel a great deal of the time between the parent company and its foreign branches as liaison agent. We're glad to have you with us, Dick. — Among recent nuptials, we note the marriage of William Stanley Vaughn to Mrs. Elizabeth Wilcox Lee at New London, Conn., on August 2; William C. G. Swift to Alice L. Walton at White Plains, N.Y., on June 30, and Captain Scarritt Adams to Beatrice M. Agnew at Seattle, Wash., on July 9. — EARL W. GLEN, *Secretary*, 2300 Ridgewood Road, Akron, Ohio. FISHER HILLS, *Assistant Secretary*, Dewey and Almy Chemical Company, 62 Whittemore Avenue, Cambridge 40, Mass.

## 1930

We were very glad to see so many classmates at the Alumni Day festivities in June. From Akron came Jack Bennett and his wife. Wives were present at the Alumni Day dinner in the evening for the first time and a number of them were also in attendance at the luncheon. Among the 1930 men we noted the following: Hank Halberg, Hermon Scott, Bob Phelan, Norm O'Shea,

Hal Spaans, Al Burling, Jim Muir, George Shrigley, Howie Gardner; and with their wives, Joe Harrington, Bill Harris, Al Sims, Jay Ricks, your Class President and Secretary. Howie told us that George Gassett had a new daughter. Connie Orfanos sent his regrets at being unable to join the Alumni Day group. His letter came from Korea, where he was stationed as an Army captain in the military government, with public utilities as his chief concern. — The new architectural school at Denver University will have Joe Shelley as its assistant director. Since graduation Joe has studied in Athens, Greece, and recently completed five years of service in the Army. — 1930 has three new bridegrooms and possibly a fourth by the time you read these notes: Ernest Reisner was married in May to Barbara Watters of Arlington, Charlie Edlund to Christobal Gormley of Dracut, Mass., in June, Al Luery to Jeane Luchs of Plainfield, N.J., in September, and a fall wedding was planned for Ed Baldwin and Josslyn Kelly of Franklin. Our best wishes to you all! — PARKER H. STARRATT, *General Secretary*, 1 Bradley Park Drive, Hingham, Mass.

### 1932

We were sorry to miss the first issue of *The Review*, but at the time the notes were due, I (Chase) was involved in one of the many strikes, with which you are all too familiar. It is increasingly difficult to garner information about our classmates. Is everybody too modest — or what? The only time information seems to be available is when one encounters a classmate accidentally while traveling. So — last week, while stopping for dinner at the Dearborn Inn near Detroit, I (Kirkpatrick) spotted Rudy Tietig sitting near by. After dinner we had a short chat which revealed that he's a consulting engineer with A. J. Boynton and Company of Chicago. Rudy was in the Navy from July, 1943, to May, 1945. He didn't seem to have much news of any of our classmates but did say that Bob Butler has left Lehigh University and is now with the United States Geological Survey. Direct news from the rest of you fellows is still lacking. Remember, there might be some if a few classmates would break down and drop one of the secretaries a line or two — make it about someone else if you're embarrassed to talk about yourselves. We should particularly like to hear from the fellows who have returned from service.

Believe it or not, next June is our 15th reunion. What do you want to do about it? You know our only wish is to carry out plans that will be satisfactory to the greatest number of our Class.

Professor Locke '96 has had a reply to a letter he sent René Hochreutiner, whose address is Kraftwerk, Laufenbourg, Switzerland. In his reply he stated that he is very happy again to receive news of M.I.T. He regretted very much that the war had caused a general suspension of mail service to Switzerland, and now seizes the opportunity to send greetings to all his friends in the Class.

I have a number of address changes, which may serve as a substitute for more detailed news of these particular fellows. Our president, Don Gilman, is now at Mississippi Products, Inc., Jackson, Miss.,

instead of Elmhurst, Ill. Other new addresses are as follows: Bennett Archambault, M. W. Kellogg Company, 225 Broadway, New York City; Wendell E. Bearce, Box 367, Ste Genevieve, Mo.; John A. Finnerty, Room 308, 236 Huntington Avenue, Boston 15, Mass.; Christian E. Grosser, 212 East State Street, Westport, Conn.; Colonel James E. Harper, Jr., Mississippi River Commission, P.O. Box 80, Vicksburg, Miss.; Eugene F. Lynch, 4018 Augusta Avenue, Richmond 21, Va.; J. Robert McCaa, 352 Oak Road, Glenside, Pa.; John A. Osterman, 653 Wood Street, Mamaronock, N.Y.; and Robert S. Prescott, 17 Somerset Avenue, Beverly, Mass. — CLARENCE M. CHASE, JR., *General Secretary*, 1207 West Seventh Street, Plainfield, N.J. *Assistant Secretaries*: CARROLL L. WILSON, National Research Corporation, 100 Brookline Avenue, Boston 15, Mass.; WILLIAM A. KIRKPATRICK, Allied Paper Mills, Kalamazoo, Mich.

### 1933

The class notes for November were too voluminous for the available space, and among other cuts, the last four paragraphs of 1933 were most regrettably lopped by the editorial staff. We therefore begin this month's column with the deleted portion of the November notes and then continue with the new material.

A card from Beau Whitton reads: "Bill Huston, who is with the National Advisory Committee for Aeronautics at Langley Field, Virginia, came down and spent two nights with us the first of May. It was good to see him again. He has put on a few years and a few pounds but otherwise seems the same. Only yesterday I was looking at some old pictures and saw one of him in 1933 and compared it with one made this month. That was a nice lot of write-up in *The Review* this month for our Class — keep it up. As to me, I am married — for nine years now — have two children (one boy, one girl) and am working like the devil trying to get some buildings done, but John L. and the railroad boys are keeping me penned in. Say hello to the fellows for me."

A note from Charlie Bell dated September 5 reads in part as follows: "I left the United Shoe Machinery Corporation research division in August, 1945, and went to Westfield, N.J., my former home, in order to take care of my father's business. My father had died the previous April, and there were a number of things that had to be looked after in New Jersey and also in Florida. When it became necessary to go to Florida last winter, we tried to get tickets on the train as far in advance as possible but were so completely stymied by skulduggery that it became necessary to pack the entire family, which consists of my wife, two girls, and a baby boy, into the old family jalopy; all in all we had a pretty successful trip. The youngster rode in style in a special plywood Pullman berth that I made for him. We returned in a few weeks, and after arriving in Westfield, N.J., I started a small manufacturing business which kept me pretty busy for the next few months. I had thought quite seriously of expanding this business into one comprising consultant research activities in one form or another, but about that time I received an offer of a position which

changed my mind. In June, I came to Providence and began work with the Universal Winding Company as director of research. This is a very progressive, middle-sized company, manufacturing textile and electrical coil winding machines, and we are embarking on a program of expanding research and development. This is exactly the kind of work that I always enjoyed doing, and right at the moment I am trying to learn to distinguish one end of a spinning machine bobbin from another and having a lot of fun at it. There is always something, however, to take the joy out of living, and it now seems to be the housing situation. We have been scratching the ground diligently for several months trying to find a place to live, and our summer rental is rapidly running out. I hope Dickens' Micawber knew what he was talking about when he said, 'Something will turn up.' I'm optimistic enough to think that it will, but just the same I'm getting mighty fed up with the idea of being a transient."

A clipping from the *Boston Traveler* of August 29, topped with a picture of William E. Barbour, Jr., a former major, as head of Tracerlab, Inc., a new Boston concern which makes instruments and deals with the constructive use of atomic radiation, is headed, "Atomic Energy Gives Boston New Industry." The firm is located at 55 Oliver Street. This very absorbing article indicated an interesting future for the new company in a very modern industry. Our best wishes to you, Bill — you must be having a thrilling time. Perhaps you could tell us more about it for *The Review*.

A subsequent note from Beau Whitton, written on October 1 enclosed a clipping of the wedding of Bill Huston to Dorothy Elizabeth Beadle on September 21. They will be at home after October 21 at 121 La Salle Avenue, Hampton, Va. Our very best wishes go to Bill and his new bride. Beau says: "Work with us has been very busy, although materials have been very scarce. It looks as if we were going to be forced into the housing business whether we want to be or not, and so we are making our preliminary preparations toward that end."

A July newspaper clipping tells us of the simultaneous decoration of Robert Maclure Love and his wife, Nancy Harkness Love, for Air Force services. Bob Love, a colonel, received the Distinguished Service Medal for exceptionally meritorious service as deputy commander of the European ferrying division of the Air Transport Command and later was commander of the A.T.C. west coast wing. Mrs. Love received the Air Medal for her operational leadership in the successful training and assignment of more than 300 qualified women fliers in the flying of advanced military aircraft. She was an executive officer of the Women's Air Force service pilots from March, 1942, to December, 1944. Our congratulations to you both.

A note from Bill Barbour dated September 13 modestly states that he will not amplify the story in the *Boston Traveler*. A very attractive letterhead he has, anyway. We'll be looking for more newspaper comments from time to time. — A clipping from the Newark evening *News* of June 20 reports the appointment of Forrest P. Dexter as a member of the faculty of Union



Junior College in Cranford, N.J. He will teach chemistry. — C. T. Newton is now the director of the United States Waterways Experiment Station at Vicksburg, Miss. Colonel Newton was a member of the Engineer Corps group.

A post card from Doug Stewart dated April 7 has just come to mind again. It read as follows: "The latest news is that I have decided to become a Rochesterian for good. I've bought a house here at the new address and have left Ingersoll-Rand Company, to become general manager of the Universal Bottled Gas Corporation. This is keeping me extremely busy, as we serve homes and industries within a 25-mile radius of the city. Our daughter Jean is now two years old and helps make things interesting around the home. I wish I could see you all again. Best regards to any of my friends."

K. C. Biswas writes that he has established a mill in Calcutta in which silk, rayon, and fine cotton fabrics are manufactured. He is contemplating the establishment of a spinning plant and has been in negotiation for the purpose of requisite machinery from the United States. He is also connected with the nine following companies as director: Machine Industries and Foundry, Ltd.; Gripex (India), Ltd.; Bagerhat Mills, Ltd.; Vasantika, Ltd.; Purex Chemical Works, Ltd.; Meena Publicity Company, Ltd.; East India Hosiery Mills, Ltd.; Delta Engineering Works, Ltd.; Kurigram Commercial Bank, Ltd. He is further connected with an association of silk mill owners of Bengal, being its honorary secretary, and is a member of the executive committee of the Indigenous Manufacturers' Association, and an ordinary member of the Bengal Mill Owners' Association.

William J. Latimer, Jr., a major, died of acute colitis on January 23, 1945, while a prisoner of war of the Japanese government. Definite report has been received that Floyd A. Mitchell, a lieutenant colonel, was killed in the Philippines on December 15, 1944, while a prisoner of war. The sympathies of the entire Class go to both families.

A clipping dated May 24 announced the engagement of Frances M. McCarthy to Norman A. Russett, a captain in the Army Air Forces, with wedding plans for June. In the July 13th issue of the *New York Herald Tribune*, we find an announcement of the wedding of Louise Marie Wilson to R. Sherman Morgan on June 6. The *Boston Herald* informs us of the marriage of Marion Pauline Kranhold to T. Francis Twomey; they are now making their home in Niagara Falls.

The *Wellesley Townsman* of June 13 carried the following article: "Frank F. Gilmore has been appointed Associate Professor of Business Administration at Harvard University Graduate School of Business Administration, effective July 1st. Upon graduation from M.I.T. in 1933, he entered industry. After four years in production work, he returned to M.I.T. as a member of the staff of the Department of Business and Engineering Administration and in 1940 was awarded the degree of Master of Science. In 1945 he resigned as assistant to the vice president for manufacturing of the Sperry Gyroscope Company of New York to return to academic work at Harvard."

The *New York News Record* of June 26 provides the following information: "Charles C. Bell has joined Universal Winding Company as director of research. Mr. Bell has specialized in machinery research the past 15 years and previously worked for nine years in an administrative engineering capacity in the research division of the United Shoe Machinery Corporation. Throughout the war he directed research and development of technical projects for the armed forces, and before the United States entered the fighting he was responsible for research on secret developments which later went into service in advance of the enemy's equipment."

The May 3d issue of the *Quincy Patriot Ledger* had a considerable article about the Legion of Merit awarded to John Herman Spiller. James Forrestal, Secretary of the Navy, signed the citation, a copy of which follows: "The President of the United States takes pleasure in presenting the Legion of Merit to Captain John Herman Spiller, U.S.N., for service as set forth in the following citation — For exceptionally meritorious conduct in the performance of outstanding services to the Government of the United States as hull superintendent, Navy Yard, Portsmouth, N.H., from 1941 to 1944. Exercising energetic and competent leadership and insisting upon the highest quality of workmanship and the inclusion of the latest military alterations, Captain Spiller personally furthered not only the eightfold increase but also the high standard of submarine production achieved by the Portsmouth Navy Yard during this period. By his engineering skill, determined efforts and untiring devotion to duty, he contributed materially to the splendid efficiency of his submarine force and to the successful prosecution of the war. His conduct throughout reflects the highest credit upon Captain Spiller and the United States naval service."

The *Wellesley Townsman* of May 30 carried a notice about E. Richards Carle, an Army captain, who died on April 26, 1942, of cerebral malaria following the infamous Bataan death march. Mrs. Carle now holds her husband's campaign ribbons, including those of the Philippine campaign, together with his decorations, the Silver Star, the Bronze Star with two oak leaf clusters, and the Purple Heart. She also received a memorial certificate, expressing appreciation of Captain Carle's services and signed by the late President, Franklin Delano Roosevelt.

The *Boston Traveler* of July 16 featured P. P. Alexander. Eleven years ago, while sweating through a thesis for a Ph.D. in metallurgy at Technology, he hit on a new process for treating rare metals, one of them uranium. Today, as president of Metal Hydrides, Inc., of Beverly, Dr. Alexander is probably the world's key man in the development of atomic energy. It was through his method of producing the rare fission metal that the United States was able to get it in sufficient quantities and at a price low enough to outstrip Germany in the research race for the atomic bomb. — GEORGE HENNING, JR., *General Secretary*, Belmont Smelting and Refining Works, Inc., 330 Belmont Avenue, Brooklyn 7, N.Y. ROBERT M. KIMBALL, *Assistant Secretary*, Room 3-208, M.I.T., Cambridge 39, Mass.

At least 12 of the 82 fellows attending our reunion in September are in business for themselves. It is interesting to speculate whether or not this independence of 15 per cent applies to the Class as a whole. Elmer Szantay, whose advertisements for extruded plastics appear frequently in *The Review*, is president of the Sandee Manufacturing Company in Chicago. Phil Rhodes and John Taplin are independent consultants in East Hampton, Long Island, and West Newton, respectively. Les Fitz Gibbon is in business with his father, manufacturing machine packings at the Pilot Packing Company, Garden City, Long Island. Irv Banquer manufactures jewelry at the Bale Pin Company in Dorchester. Ed Taubman is a retail merchant in Baltimore. Although he did not specify his line, perhaps he has a suit or white shirt for a threadbare classmate. Johnny Bradner is president of the Lees Bradner Company in Cleveland. Phil Johnston lives in Old Lyme, Conn., but divides his working time between the Johnston Research Associates in Hartford and the Alpha Corporation in Greenwich. His outfit apparently will take a crack at developing almost anything in the mechanical line, and without too much persuasion will tell you how to run your business, besides. Nelson Thorp is a partner in H. E. Thorp and Son, realtors, Westerly. (Wanna buy a hut?) Jack Orchard is general manager of Orchard Brothers, Inc., in Rutherford, N.J. Sid Grazi defines his business as the S. Grazi Company at 320 Broadway, New York City. We wonder whether there's a connection between his direction of the Tech Show orchestra and the Great White Way. Pete Grant is president of the Grant Photo Products, Inc., in New York, manufacturers of commercial photographers' supplies, with a branch factory in Cleveland.

Eric Jones, who transferred from Princeton in our sophomore year, put in at the Pequot Yacht Club at Southport, Conn., a month or so ago. He has abandoned flying, and in fact business, for a time, in favor of the briny deep. He has acquired a neat, new 38-foot cruising sloop on which he plans to spend the winter in Florida. Ricky has had two successful cracks at business for himself since graduation. Shortly before the war, he and two buddies bought out the Penn Rivet Company in Philadelphia and did well making rivets for the aircraft industry. Later he acquired substantial interest in a former candymaking machinery company and converted the plant to make airplane landing gear subassemblies and bomb release racks. Still a bachelor, Rick has decided to make a business of loafing for a while, hence the budding yachtsman's career.

Murray Brown has been working on the railroad, that is, until he took a job designing structural steel for Stone and Webster this fall. Murray took to the prairies and tall timber (Montana and high spots east and west) on leaving school. He spent eight years with the Northern Pacific on construction and maintenance of way and followed these up with two years on Diesel locomotive repair and bridges and building maintenance with the Boston and Maine. Zay Curtis, who missed reunion for a

round with the gripe, has a key job on production planning at the Chance Vought division of United Aircraft in Stratford, Conn., and lives with his wife and young son in Fairfield. Mal Porter furnished a bit of news about himself a while ago. Mal had a commission in the Marines during the war, was assigned for a time to a bomb disposal unit (quaint hobby), and wound up his service with a tour of the Marshalls, Gilberts, and New Britain with the United States Strategic Bombing Survey. Mal has returned to work for Du Pont, with headquarters in Billings, Mont. — J. BARTON CHAPMAN, *General Secretary*, 7 Lalley Boulevard, Fairfield, Conn.

## 1939

Hal Seykota gives us some of the news of the far West — Seattle, to be more specific — with the following: "Our Class is well represented here; when the crew came out for the regatta on Lake Washington and made such a wonderful showing recently, the local Alumni were invited over to receive and welcome them. A pleasant surprise ensued when it was discovered that 1939 was on deck in (comparatively) large numbers: John Alexander, Jim Barton, Ed Fish, Dick Loesch, Ted Snow, Bob Withington, and Woodie Woodward." Hal, after more than five years in the Army, was separated as a major on last October 16. He has since joined the Liquid Carbonic Corporation and has been sent to Seattle to assist in the installation of new equipment for liquid carbon dioxide and dry ice. In July of 1945, he was married to Hilda Hawker, an American nurse from Seattle, in France. Hal's job has by now probably taken him to Chicago, or thereabouts.

His letter ends, "I am sweating out becoming a father today," with the postscript added, some anxious hours later, "It's a boy — born this afternoon." Perhaps it does take momentous occasions such as the above to inspire correspondence to these notes: here's to larger families for 1939. Incidentally, the column would, I'm sure, be interested in a comprehensive review of the activities of the offspring.

Art Porter, we learn, has recently taken up his new post at the Military College of Science at Shrevenham, his current address being 1 Park Avenue, Shrevenham near Swindon, England.

We gather from a somewhat undecipherable, even more unprintable, scribbled-on menu that 1939 was likewise well represented at all the Alumni functions last spring. Apparently the dinner was an immense success. In the complications of moving three times in as many months, the secretarial files seem to have lost track of the active participants — with apologies all around.

Our news service faithfully reports the recent wedding of Felix French and Kathryn Fair of Natick, Mass., late in August. Felix is completing a graduate course at the Institute. The marriage of Charlie Washburn to Florence Gardner of Cortland, N.Y., took place on September 20. Charles recently concluded nearly six years of service with the Navy, retiring as a lieutenant commander in the Reserve. Much of his service was in the Pacific on labor which was a top war secret. Jim Laubach, also a lieutenant commander in the Naval Reserve, is engaged to Marjorie Patrick of

Syracuse, N.Y. — STUART PAIGE, *General Secretary*, 701 Mill Plain Road, Fairfield, Conn. ROBERT C. CASSELMAN, *Assistant Secretary*, 271 Cypress Street, Newton Center 59, Mass.

## 1942

The news this month is mainly about weddings and engagements. A goodly number of classmates have taken the fatal step or are contemplating it in the near future. Philip Fox was married in Washington to Lucile Jeffrey on May 18. Charles Speas married Elizabeth Jean Towers of Kew Gardens, Queens, N.Y., on June 22. James Engel was married on June 23 to Lucile Gluck in Tuckahoe, N.Y. Richard Haven was married in Seattle to Betty Brace on June 29. On July 4 in New Bedford Paul Hotte and Mildred Anthony were joined. Warren Powers and Jane Ann Caparn exchanged vows on July 13 in Arlington, N.J. Philip Phaneuf and Lucille Schimpeler were married on August 10 in Louisville, Ky. Joseph Keenan was married to Virginia Lichfeld on September 5, also in Louisville. Bill Kellogg and Bettie Pease of Torrington, Conn., were wed on September 14.

Engagements of 1942 men include those of Mary Hausman of Lakeville, Conn., to Calvin Morser; Thelma Levovich of Boston to Stan Golembe; Rhoda Reig of New York to Bernard Greenes; Phyllis Benthale of Boston to Hans Aschaffenburg; and Angelika Rudenberg of Belmont, Mass., to Bob Howard.

Carleton Jealous has been at Oak Ridge since 1943. He is married to the former Mamie Killion of Oak Ridge and is the father of a daughter, Alice. According to reports, he is losing his Boston accent. In addition to engineering work, he has spent some time as editor of the *Oak Ridge Journal*. — A letter from Lou Rosenblum includes some news of George Arnold. George is now at 112 Strathmeade Street, Falls Church, Va. He is a civilian again after 32 months in North Africa. He married Dorothy Pickering in August, 1945. George is now at the Weather Bureau in Washington. — Bob Close, II, a lieutenant in the Naval Reserve, was given a commendation by the Secretary of the Navy, "for outstanding performance of duty as project engineer and subsequently as chief engineer in the navigation section, Special Devices Division, Office of Research and Inventions, from August, 1942, to May, 1945." — Warren Kaye, a major, is now with the Sulphide Ore Process Company in South Strafford, Vt. Warren is married to the former Mary Deyermund of Andover, Mass., and they have a daughter, Carolyn.

Arthur Knudsen, who worked at Los Alamos and took part in Operation Crossroads, has been awarded a fellowship at the Institute for Nuclear Studies at the University of Chicago. Robert Owen has been appointed as a foreign service officer, and is assigned to the State Department. Norman Pinto, formerly with the metallurgical laboratory of the University of Chicago, is now associated with the Joslyn Manufacturing and Supply Company of Fort Wayne, Ind.

We regret to announce that John D. Root, an Army captain, was killed in action on June 8, 1944, in France.

## 1943

Your class notes are to keep everybody informed about the Class. Please write in your news! — WARREN S. LOUD, *Acting Secretary*, Room 2-272, M.I.T., Cambridge 39, Mass.

Dick Feingold, who is now senior technical engineer in the machine design division of Jackson and Moreland here in Boston, has written as follows: "Hap Hosley is working in New York. I saw Kemp Maples at the Graduate House, and he told me that former Navy pilot Al Brodie is also back at Technology. Bill Katz is back taking a master's in Metallurgy. Mort Schultz is also back, as is Ray Frankel, both after masters' degrees. Mike Salvadore and Charlie Holt are still at the servomechanisms lab. Bill Verrochi is around town and will return to school in the fall. Jack Foley, now married to his Jean, is working in Boston. A while ago I talked to Greg Azarigian, who is with Pratt and Whitney in Hartford. Dick Foley is married, and he and Dick Childerhose are still with United Aircraft research. Ed McClaud has gone back to Virginia. I saw Bud Greenwald and his wife; he is working in Providence. I also saw Stan Roboff and his wife, along with Bud Sackheim, at the June reunion. More June reunion people: Red Brindis, Herb Twaddle, Bert Picot, Bill Terry, Hank Tiedemann, and Barrie Mackenzie. I see Dick Barry around Park Square quite often. He is with Cram and Ferguson, architects. Bob Anderson is back from motor torpedo boat service and may return to the Institute for advanced study. Cy Kano is back from a hitch in the Army and on the staff of the automotive lab at the Institute. Eugene Eisenberg recently became engaged to Shirley Helman from Brookline. Shirley is a graduate of Bryn Mawr."

Andie Batiuchok writes: "After more than two years, I finally received my wings in May. In June, 1945, Cupid shot his arrow my way, and I was married to the former Dorothy Sales from Virginia. Navy life suits us perfectly, since we both like to travel. It is our hope that Dottie will be able to join me wherever I go, for so far we have been lucky enough to be together at all the bases." From the University of Chicago we have heard that Jack Sibley was recently graduated with an M.D. and was simultaneously commissioned in the Army Air Forces Medical Corps. Doc Sibley's special preference is for surgery, and he will interne at the Cincinnati General Hospital. At Chicago, he was a member of Alpha Kappa Kappa medical fraternity. At Cornell University, Malcolm Burton has been appointed to an assistant professorship in the metallurgy department. Since his graduation from Technology with a master's degree in 1943, he has been on the staff there until this new appointment.

We understand that Al Emond has caused some excitement on Broadway with a right-hand drive Pontiac which he bought in Europe and had shipped back to the States for him. That must be one of the ways to beat the car shortage over here! He and Mrs. Emond, the former Doris L. Bertram of Beachmont, Mass., expect to make their home in California. Waldo Davis has taken a post with the Eastman Kodak Company in Rochester as an indus-



trial engineer in the company's optics manufacturing plant at the Hawk-Eye Works. Another man with a new job is Bob Nelson who, after his release from the Army in May, has taken a civilian post with the War Department in Paris and expects to return to the States later in November. On the other side of the world, Eng Joo Tan has a post with the Aik Hoe Company, Ltd., in Singapore. Last fall he had a message from his family telling him that they were safe and that their rubber plants in Malaya were soon to resume operation. He will be the sole distributor for Teco products in China and also plans to start a division for construction in his father's firm.

I have a note from Lou Schwartz, who lets us know that he will be the representative of a New York firm in Cuba. He says also that his name has been changed from Louis D. Schwartz, Jr., to Louis D. Black, Jr. Gilbert Monet says that he is very happy to let us know that in April he was awarded a Gerard Swope Fellowship by the General Electric Educational Fund so that he will be returning to the Institute for his doctor's degree. Thomas Harriman was also in Boston for a few days when he delivered a lecture to the Society of Automotive Engineers. His subject was "The Practical Helicopter." Currently in charge of the Bell Aircraft Corporation's newest helicopter product, he has in the past worked on some of this organization's jet propelled planes. When last we received any news of Lewis Housman, he was a member of the Chemical Warfare Service's guard and security division at Edgewood Arsenal. Another man still in uniform is Walter Clark, a Navy lieutenant, who has been appointed junior scientific aide to Commodore R. E. Robinson, Jr., chief of the London branch of the Office of Research and Inventions. Walter did graduate work at the Institute in the Department of Food Technology and was later a food chemist for the Buxton Preserving Company in Boston. After his call to active duty with the Navy, he spent two and one-half years at the Naval Research Laboratory working on tropical deterioration.

We have heard that Andrew Miller has returned to the States after having been a prisoner of the Japanese from May, 1942, until September, 1945. He was discharged at Fort Leavenworth, but more news than this we do not have. Samuel Maloof is at present a graduate student and research assistant at the Pennsylvania State College. I am very sorry to have to record that Lisle van Burgh, a lieutenant, has been officially declared dead by the Navy. You will recall that he was listed as missing in action after his plane failed to return from an armed reconnaissance trip over the Formosa Straits area during April, 1945. He was at that time assigned to Patrol Bomb-

ing Squadron 119 based at Clark Field in the Philippines. A colorful announcement tells me that Thomas Rogers Lichten was born to Sue and Bob Lichten on May 18; and from Blanche and Warren Lange we have news that Warren Lange, Jr., is nearly two years old now. — CLINTON C. KEMP, *General Secretary*, Barrington Court, 988 Memorial Drive, Cambridge 38, Mass.

#### 1945 (6-45)

As the new volume of The Review goes to press, we find that most of the Class has returned to civilian life and is hunting for one thing or another — jobs, apartments, cars, what have you? Many have returned to the Institute, either to continue from where Uncle Sam interrupted or to do graduate work and teaching. Among them are John W. Lake, Jr., and George W. Webb, Jr., both of whom were prisoners of war.

Word has come from the War Department that Theodore M. Wardwell, Jr., who was reported as missing in action as of November 1, 1944, has been officially confirmed as killed in action on that date.

During the summer many marriages and engagements have been announced. Last June, Bill McKay married Betty Elston of West Roxbury. Bill returned to civilian life after having been an ensign aboard the L.S.M. 110 of Norfolk and Guantanamo Bay, Cuba. In July, Virginia Archer of Hamden, Conn., became the bride of Ted Blakeslee in Marquand Chapel of the Yale Divinity School. Ted is now with George A. Sharp, naval architect, of New York. Also in June, C. Homer Elliott, Jr., married Roberta Greenall of Belmont. Homer received his M.S., and he and his wife are living in Sweden while he studies under a fellowship from the American-Scandinavian Foundation.

In May, Barbara Walker of Washington, D.C., became engaged to Douglas Doty, and Lucile Flaherty of Denver, Colo., to John Morrison. In both cases June weddings were planned. The engagement of Nancy Connor of Sarasota, Fla., to Emilio Hoigne has been announced. Hoigne is in business with his father, who is president of Compagnia Supercastor in Buenos Aires. Oscar Burns has become engaged to Jane Laird of Wilmington, Del. Robert D. Schmitt is engaged to Janet Lawson of West Bridgewater, Mass. Bob is an engineer with Edward G. Budd Manufacturing Company of Philadelphia. George R. White, Jr., who was with the Class during the freshman year and has since served in the Marine Air Corps on Guam, Okinawa, and Midway, is engaged to Janet Brown of Swampscott, Mass. He plans to return to school this fall.

Philip B. Brady, who was a member of the Class during our freshman year, has

been graduated from the United States Military Academy and has received his commission as a second lieutenant in the Field Artillery. Another classmate who left at the same time was Robert D. Parkhurst. He entered the United States Coast Guard Academy and was graduated last June. He was first man in his class and received seven of the 16 prizes offered. Russell Lindberg, who received his M.S. degree last October, has been employed since April as a metallurgist with the U.S. Bureau of Standards in Washington, D.C.

That is about all the news at this time, but I'm sure there is lots more to be had. Now that everyone is more or less settled, just drop me a postal card and let us know what is going on. My thanks to Tom Hewson for pinch-hitting for me while I was making a flag-waving trip around the world aboard the U.S.S. *Helena*. And in case you haven't already heard, I became engaged last December to Janice Meyer of Fall River. — DAVID P. FLOOD, *General Secretary*, 184 Warren Road, Framingham, Mass. THOMAS A. HEWSON, *Assistant Secretary*, Room 3-257, M. I. T., Cambridge 39, Mass.

#### 1946 (2-46)

Greetings, all ye loyal men of 2-46! The news is beginning to roll in, although a little tardy.

Here is some more information on the latest marriages and engagements. William Young Humphreys, 3d, became engaged to Jayne W. Madden of Brookside Park, Greenwich, Conn., on May 25. The engagement of Katherine E. Stearns, of Bronxville, N.Y., to Ernie Buckman was announced on July 13. Harriett Lucey, of Framingham, Mass., promised to be Mrs. Edward W. Richardson on June 27. A dauntless S.A.E. man from Tulsa, Okla., one Bill Auerswald by name, got a Longmeadow, Mass., miss to wait for his discharge on July 31. She is Doris Oechsle.

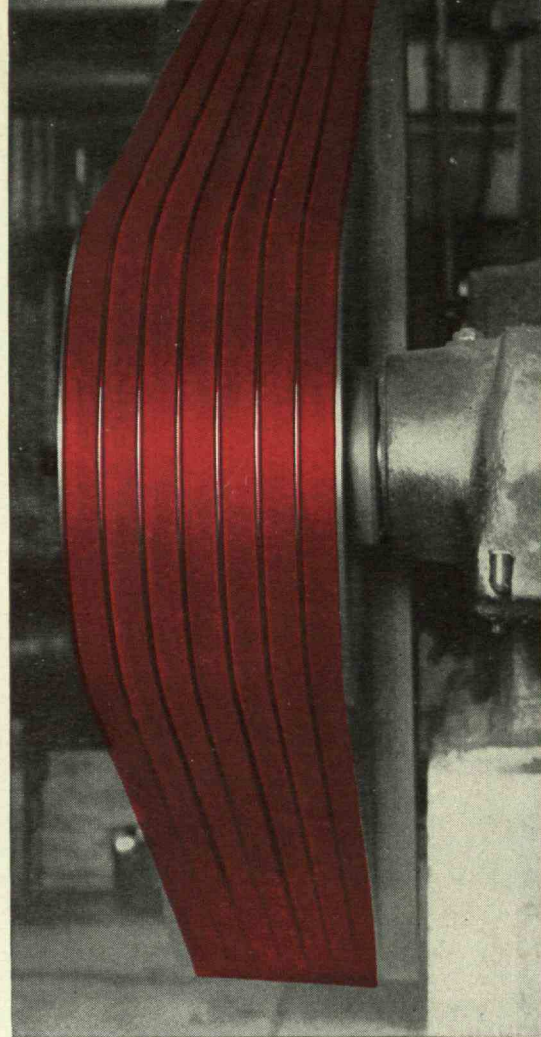
Only two marriage announcements this time — what, are you fellows getting cautious, or can't you find the right one? John Ayer Maynard married Janet Cary Eaton of Winchester, Mass., on July 2 and on July 6, Bill McGrath and Priscilla Harris of Arlington, Va., recited their marriage vows.

Here is a little news about some lucky V-12 men of our Class. Cliff Sibley, who had been on the U.S.S. *Montpelier*, received his discharge on June 28. Carl Nelson was released to inactive duty by the Navy on August 10. Since graduation he has been stationed with the Naval Bureau of Aeronautics Representative's office in New York City. — JAMES S. CRAIG, *General Secretary*, 77 Woodruff Avenue, Scarsdale, N.Y. THOMAS F. KELLEY, JR., *Assistant Secretary*, 578 Andover Street, Lowell, Mass.

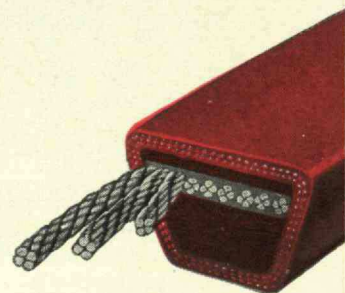




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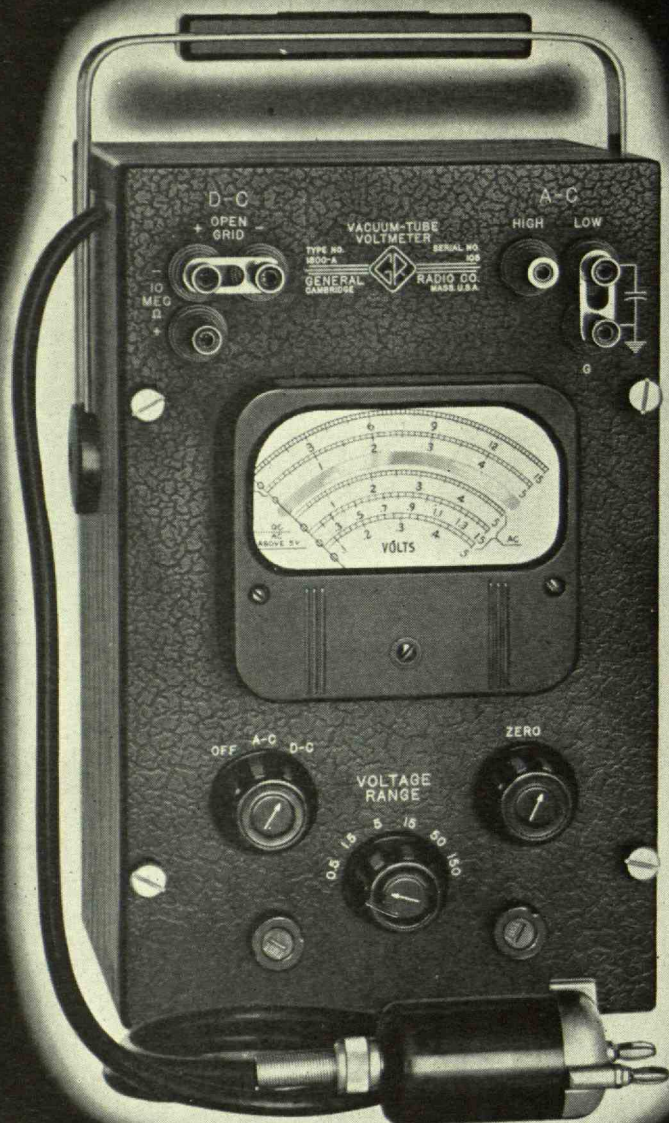
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